TEXAS BROADBAND DEVELOPMENT OFFICE

Texas Broadband

Brooks County

May 2025

Technical Assistance Program
Report

Texas Comptroller
of Public Accounts

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1 Executive Summary

Purpose: The Broadband Development Office (BDO) has established the Technical Assistance Program (TAP) to provide additional resources to communities that need help with broadband planning. TAP will aid local governments and communities by providing assistance to identify local broadband development opportunities and prepare for forthcoming state and federal funds.

All Texas counties that lack the necessary capacity for broadband planning were eligible to participate. Leaders of a county's Broadband Planning Committee (BPC), as verified by the committee's certification with the BDO, were eligible to apply. Thirty-two counties were accepted into the program and will have direct access to broadband planning and consulting services at no cost.

The BDO has contracted Cobb, Fendley and Associates to provide broadband planning and consulting services for TAP. These services are awarded at the county-level to augment local governments and communities' capacities to better prepare for local opportunities, including forthcoming state and federal funds.

This summary and report are on behalf of Brooks County, Texas. A kickoff between the project team and the county occurred in March 2025. This report was finalized in May 2025.

PLEASE NOTE: The National Broadband Serviceable Location Fabric is a common data set of all residential and business locations (or structures) in the U.S. where fixed broadband internet access service is or can be installed. Each location in the Fabric is called a Broadband Serviceable Location (BSL), and the definition of a BSL is determined by the Federal Communications Commission (FCC). The Fabric is the foundational location database that is being used across several government programs, including National Telecommunications and Information Administration's (NTIA) Broadband Equity, Access, and Deployment Program (BEAD), the FCC's Broadband Data Collection, National Broadband Maps and more. CostQuest is the official contractor and provider of the National Serviceable Location Fabric data. Data used within this report was obtained from CostQuest and is Version 5 as of June 30, 2024. Version 5 data was announced as the data source for the Texas BDO's BEAD Subgrantee Selection Process. At the time of this report, the Texas BEAD Challenge Process is still ongoing and no Final Determination has been released to indicate the final list of eligible BEAD locations. Please be aware that internet service providers (ISPs) may have continued construction and implementation of new service locations since Version 5, and the data within may be outdated by the time this report finalizes. Please conduct continuing conversations with potential partners to see where changes may have been made.

Stakeholder Identification and Outreach

About: This service entails performing a deep analytical dive into a county's demographics to identify its unique needs and characteristics. It offers outreach services through the organizing and executing of stakeholder outreach events and strategies that provide inclusive opportunities for potential stakeholders. This service is considered foundational in the broadband expansion process.

Key Takeaways: There is a need for availability and affordability for broadband in Brooks County. The county needs a comprehensive solution to address the unique and difficult areas for deployment that includes not only construction and access, but affordability, adoption and sustainability given the sparse population and limited workforce. Additional takeaways include:

- Brooks County applied for $25 million Department of Transportation (DOT) grant for road improvements to support ranching, deer farming, and mineral industries.

- Major employment barriers include housing issues, childcare issues, and poverty.
- Faster internet in general is in high demand, as well as more broadband for remote and work from home opportunities.
- Brooks County ISD is the county's largest employer with approximately 25 percent of employees commuting from other counties.
- Brooks County has a robust fire department that would benefit from improved connectivity.
- Broadband connectivity should be prioritized around schools, starting with Brooks County ISD, where the need and potential impact are greatest.

Recommendations: Future stakeholder outreach in Brooks County should prioritize strengthening partnerships that support infrastructure and economic development. If possible, supporting the existing grant applications in progress from the county and benefiting the local industries would be most beneficial. Outreach should engage local business owners, agricultural leaders, and transportation advocates by highlighting how the grant could boost jobs and regional mobility. Addressing major employment barriers such as housing shortages, childcare challenges, and poverty will require collaboration with housing authorities, community organizations, and employers to identify solutions like affordable housing projects and childcare support programs. Expanding broadband access must also be a top priority, beginning with Brooks County ISD as a foundation for broader rural connectivity efforts that can benefit homes, public facilities, and remote workers. Public safety officials, including the fire department and the under-resourced sheriff's office, should be involved in securing funding and tools to improve emergency response, communication, and coordination, especially in rural areas where safety remains a concern. Finally, all outreach should be rooted in transparency and active community involvement to build trust across education, public safety, health, business and technology sectors, ensuring residents understand and help shape improvements that meet Brooks County's unique needs.

Report Location:

- Section 2, Stakeholder Identification
- Section 3, Outreach.
- Appendix 9.1, Data Sources for Demographic and Census Related Information.

Asset Mapping

About: This provides mapping services by locating identifiable broadband assets within the county. This collection of data begins with integrating data that may have been previously collected in local studies, followed by adding layers of available data identified by engaging with local strategic partners like regional ISPs and public institutions. An Asset Map locates any relevant and identifiable broadband infrastructure that may be a valuable resource in developing and executing a community's broadband goals.

Asset Mapping does not have its own report section but is, however, included throughout the report as needed. Any notable mapping takeaways or recommendations are within other sections of the report.

Report Location:

- Section 4, Gap Analysis and Community Needs Identification.
- Appendix 9.2, Asset Mapping Sourcing

Gap Analysis and Community Needs Identification

About: This service provides an analytical approach to measuring the gaps between a county's existing infrastructure and local broadband goals. This includes identifying solutions for addressing issues with broadband access, as well as identifying current public policy standards and practices that can be implemented to promote local investment in broadband expansion.

Key Takeaways: Brooks County faces significant gaps in broadband availability, with large areas classified as unserved or underserved. These gaps are compounded by the county's rural geography with dispersed population leading to gaps in access of broadband infrastructure. Even where broadband is available, adoption is hindered by digital literacy gaps and a lack of devices. Almost 23 percent of households lack smart devices, rendering internet access ineffective for many people. While the county's median age of 38 suggests potential for tech adoption, targeted education programs are still needed to help less digitally fluent residents get online. Broadband affordability is another major barrier for Brooks County. Rural areas with limited provider competition face higher costs, and with a median household income of just $20,247 — well below state and national averages — many families simply can't afford broadband or the devices needed to use it. This combination of low income, limited provider options, and a significant device gap continues to widen the digital divide in Brooks County.

Existing funding programs, or enforceable commitments, like the Enhanced Alternative Connect America Cost Model (Enhanced A-CAM, or E-ACAM) program offer a potential solution, with funding aimed at expanding broadband to unserved areas. However, these efforts still leave many communities in need of more extensive service. The continued lack of broadband infrastructure in rural parts of the county limits access to vital services such as healthcare, education, and economic opportunities.

Aside from the broadband enforceable commitments, the remaining addresses and areas of need include those that are still considered unserved or underserved and are in need of a future-proof broadband solution. These are the locations that would then be BEAD eligible for coverage and should be the focus, as it relates to providing initial broadband infrastructure access. In terms of specific areas of need, Exhibit 23 highlights significant broadband gaps across Brooks County and includes:

- **Unserved Areas (Purple Squares):** These locations in Brooks County are identified as having no broadband service meeting minimum standards. The map highlights 133 unserved BSLs, accounting for 95 percent of the total unserved and underserved BSLs in the county. These areas are without reliable internet access, which significantly limits residents' ability to participate in the digital economy, access online education, or take advantage of telehealth services. The lack of broadband in these areas creates a substantial barrier to personal and economic development, making them a top priority for broadband infrastructure investments.
- **Underserved Areas (Green Squares):** These regions in Brooks County have some form of broadband access, but the service does not meet the full connectivity needs of the population. The map highlights seven underserved BSLs, representing 5 percent of the total unserved and underserved BSLs in the county. Although these areas have broadband, the service may be slow, unreliable, or insufficient to support modern digital demands such as remote work, e-learning, and healthcare services. Addressing these gaps would help improve service quality and meet the rising demand for high-speed internet.

Recommendations: Brooks County faces significant broadband challenges that go beyond just infrastructure. While there are 133 unserved and 7 underserved BSLs that remain after the enforceable commitments, the issue is compounded by affordability barriers, a lack of digital devices, and limited digital literacy. These factors collectively create a deep digital divide, especially in the county's more rural and lower-income areas. To address these gaps, the county should prioritize broadband infrastructure investments in the unserved BSLs, which account for 95 percent of the total unserved and underserved locations. These areas should be eligible for funding through the BEAD program and should be considered a top priority. At the same time, it's important to coordinate with awardees of the existing federal program, Enhanced A-CAM, to avoid duplicating efforts and ensure that every address left out of those commitments is covered, but also to determine plans for additional buildout outside of the requirements of the funding programs.

Nearly 23 percent of households lack a smart device, which makes internet access unusable for a large portion of the population. The county should implement programs that provide affordable or subsidized devices and offer digital literacy training, particularly for older or less tech-savvy residents, to ensure people can actually use the service once it's available. Affordability also remains a major issue, with Brooks County's median household income far below state and national averages. Rural households, especially those with limited provider options, often face higher broadband prices and fewer choices. Expanding competition in these areas, potentially by offering incentives or utilizing public infrastructure like towers or ROW, could help lower costs and improve service quality. Brooks County's broadband gaps require a comprehensive approach that includes infrastructure expansion, device access, digital education, and affordability support. Only by tackling all of these factors together can the county close its digital divide and unlock the full potential of broadband for its residents.

Report Location:

- Section 4, Gap Analysis and Community Needs Identification.
- Appendix 9.1, Data Sources for Demographic and Census Related Information.
- Appendix 9.2, Asset Mapping Sourcing.

Public Private Partnership (P3) Identification and Analysis

About: This service identifies potential opportunities for local public jurisdictions to establish formal partnerships with private providers. This includes evaluating all applicable business models that suit local broadband goals, identifying the potential risks involved and facilitating Requests for Proposals for partnering opportunities.

Key Takeaways: One entity does not have to own, operate and maintain all five components (Right of Way (ROW), middle-mile network infrastructure, last-mile network infrastructure, operation of the infrastructure and customer service**)** of a network. Typically, there are several participants from both the public and private side involved in the ownership and operations of these components. Once a broadband infrastructure opportunity has been identified, community leaders should begin to define their degree of desire in assuming responsibility financially or operationally within such a venture. If private sector partners could be involved, the public agency's intentions are important to tailor better their outreach to the private sector via a formal channel such as a Request for Expressions of Interest (RFEI). There are five main components that can be delineated between a private and public partner that indicate level of responsibility:

- Full municipal broadband.
- Publicly owned, privately serviced.

- Hybrid ownership.
- Private developer open access.
- Full private broadband.

Recommendations: Throughout Brooks County, Falfurrias and Encino are the only two prominent areas of visible clustering of ISP coverage. There does not appear to be one prominent ISP in the region with both areas displaying a wide variety of ISPs. However, between these two areas it appears that AT&T, Gtek Communications, Spectrum, and VTX Communications have a large cluster in Falfurrias. Both T-Mobile and Verizon have a large cluster in both Falfurrias and Encino, with a few service locations extending west of Encino. Valley Telephone Cooperative appears to be the only ISP with clusters in and to the west of Encino, along with clusters southwest of Falfurrias. It would make sense to discuss any network designs for unserved and underserved addresses in proximity to these ISPs with the closest ISP(s).

Please see Section 5.2.1 Potential Partners in Brooks County for more detailed information.

Report Location:

- Section 5, P3 Identification and Analysis.
- Appendix 9.3, Brooks County Provider Service Maps.
- Appendix 9.4, P3 - Request for Expression of Interest (RFEI).

Workforce Development Strategy

About: This service identifies and engages with organizations that support the local development of broadband workforce solutions. It includes the development of strategies that aim to leverage workforce development opportunities with existing local resources and expertise.

Key Takeaways: The broadband workforce referenced throughout this report includes 43 occupations identified by the NTIA, Continuum Capital and the Texas Digital Opportunity Plan. For this analysis, these 43 occupations have been grouped under three categories. These include 18 occupations within construction, installation and support, 10 occupations within skilled technicians and 15 occupations within project designers and specialists — all with various education and work experience requirements. Brooks County currently has limited broadband job offerings, with only nine of the 43 broadband occupations representing 10 or more jobs in the county.

Recommendations: Recommendations for improving the broadband workforce in Brooks County center on five areas: collaboration, alignment, awareness, diversification and funding. Collaborating with ISPs to understand in-demand occupations, skills and training credentials in real time is among the most important steps in building the broadband workforce. This real-time industry information would support the alignment of training curriculum with in-demand skills across workforce development entities, leading to industry-recognized credentials sought by local employers. Raising greater awareness and exposure to the quality career opportunities in the broadband industry is another essential broadband workforce development strategy. Increased awareness can also help to diversify talent pipelines and ensure broadband career pathways are accessible. Finally, identifying and pursuing public regional, state and federal funding resources to scale and sustain broadband workforce development programs will be essential to any broadband workforce development strategy.

Please see Section 6.4 Strategic Recommendations for more detailed information.

Report Location:

- Section 6, Workforce Development.

Digital Opportunity Strategy and Needs Identification

About: This service looks beyond the accessibility of broadband by working to identify a county's gaps in the usability of the county's broadband services (i.e., the skills and technology necessary to operate them). It leverages stakeholder outreach and engagement as well as data collection methods to pinpoint a county's needs. Additionally, this service will identify actionable items that can be taken within the county in pursuit of achieving its broadband goals.

Key Takeaways: According to the FCC, three core pillars must be addressed to bridge the digital divide and achieve digital opportunity: availability, affordability and adoption. It is recommended that counties develop a more robust digital opportunity plan to further identify digital inclusion gaps for addressing these needs. The digital opportunity plan can be developed at a regional level since the partnership between counties can solidify a networked system for residents to tap into. There are several programs for the county to consider applying for or partnering with on an application. These include the following programs administered through the Texas BDO, U.S. Department of Agriculture (USDA) and NTIA. There are a range of factors for consideration, including match requirements, eligible areas, partnership agreements and other key criteria. These funding opportunities include the State Digital Equity Capacity Grant Program, the Digital Equity Competitive Grant Program, the BEAD Program, Texas Proposition 8: Broadband Infrastructure Fund Amendment, Community Development Block Grant (CDBG) Colonia Fund – Construction, CDBG Community Development Fund, USDA ReConnect (Future Rounds), USDA Distance and Telemedicine and USDA Community Facilities.

BEAD Grant Recommendations (See Section 7.4.1 Broadband, Equity, Access, and Deployment Program Summary for more detailed information).

(1) For the broader BEAD application, the county should partner with a local provider that has a strong track record infrastructure provision and customer service in the region to serve the eligible BEAD locations.

Digital Opportunity Recommendations (See Section 7.6, County-specific Digital Opportunities Planning for more detailed information.)

(1) The county should adopt a Digital Opportunity Strategy to address adoption and affordability challenges specific to covered populations in the county.
(2) Although currently on pause, as of April 2025, the county, or an eligible entity, should apply for the Digital Equity Capacity Grant to fund digital adoption programs in the community once the program is reopened. Some of the relevant eligible entity types in this county under this grant include: the county (political subdivision of state), not-for-profit entity, community anchor institution, or a partnership.
    a. A specific entity the county should consider a partnership with is the Ed Rachal Memorial Library for a Texas Digital Equity Capacity Grant application.
    b. A regional application through the Coastal Bend Council of Government (COG) could also provide a path to expand digital adoption in Brooks County.

Colonia Area Specific Recommendation

(1) The county should assess using the Colonia Fund — Construction to fund broadband infrastructure and related facilities for the Colonias in Brooks County.
    a. This Texas Department of Agriculture program is designed to primarily upgrade water and sewer infrastructure but joint trenching to install conduit or installation of a water tower could assist with broadband deployment in these communities.

E-ACAM Coordination Recommendation

(1) Engage with the provider building out broadband service under E-ACAM obligations in the county regarding the timeline for the buildout to better understand the technology deployment, buildout timeline, and project area details.

Report Location:

- Section 7, Digital Opportunities Strategy and Needs Identification
- Appendix 9.5, Digital Opportunity Definitions.
- Appendix 9.6, Digital Opportunity Roadmaps.

Network Design Assessment

About: Also known as a High-Level Design (HLD), this service provides solutions that serve commercial, residential and public facilities where they are most needed, where gaps are identifiable and in a way that aligns with local broadband goals. This includes developing high-level network designs that provide different idealized county solutions and provide continued guidance throughout the network development process.

Key Takeaways: For the county, these HLDs are intended to provide insight into possible infrastructure and costs to build fiber in selected areas. Brooks County can use these HLDs to determine options to improve broadband. Options can include deciding who the most appropriate owner would be (a public or private organization) and providing insight into the costs that will need to be invested to build the infrastructure needed. The HLDs are intended to be a representative sample of the scenarios of networks that will be needed to reach the unserved and underserved BSLs. If the county determines that private providers are the most likely entities to build this infrastructure, the HLDs can help the county know what investment will be needed by the ISPs to help in the discussions of how to have the construction make financial sense. Private ISPs create their own HLDs, therefore these HLDs are intended to be the preliminary step if any public infrastructure is considered or to help in discussions with ISPs.

However, for a general recommendation based on existing infrastructure and current pricing, within Appendix 9.7, Network Design Assessments the approximate fiber areas and applicable costing are shown.

Recommendations: The HLDs are intended to show the infrastructure needed and approximate costs to connect unserved and underserved BSLs within representative areas of Brooks County. Additional connections, like those for community public access points (CPAs), could be included in a secondary design if necessary (if there is consideration of a public project). These HLDs can be utilized to help define public projects that might be considered (if any) or to provide central information regarding potential infrastructure construction routes and costs in discussions with ISPs. Unserved and underserved BSLs frequently have poor broadband due to specific reasons, often driven by cost. These HLDs can help

the county understand barriers faced by ISPs to help in collaborative discussions of ways to overcome those barriers.

In addition, these HLDs can provide insight into what project steps might entail. Key factors influencing the project timeline include determining and defining partnerships, further clarification on network design definitions (developed from HLDs), details design, contractor bidding, material procurement, permitting, etc. With BEAD grants opening across the country, there are concerns about availability of construction companies and employees and materials.

The HLDs utilize buried fiber and Gigabit Passive Optical Network (GPON) architecture with cabinets in each designated area to cost-effectively connect unserved and underserved addresses. Because middle-mile can take several forms and possibly not be identified, costs from these cabinets to available middle-mile will need to be added (along with middle-mile leasing costs). Alternative solutions, like point-to-point connections, may be necessary for remote addresses, but costs are not included due to topography and distance variables. These HLDs serve as tools for discussions with P3 providers to explore options for BSLs and other areas of need.

Please see Exhibit 52: HLD Areas for Brooks County for a visual representation of the fiber-designed networks within the areas of need.

Report Location:

- Section 8, Network Design Assessments
- Appendix 9.7, Network Design Assessments.

2 Stakeholder Identification

2.1 Stakeholder Identification

The stakeholder identification portion of the report is to perform a deep analytical dive into a county's demographics to identify its unique needs and characteristics. Additionally, the team developed a robust contact list of key stakeholders based on demographic research. Key stakeholders were identified and included residents, businesses, government agencies, service providers, and community organizations. The stakeholders represented in this broadband study can address the diverse needs, concerns, and perspectives of those affected by, or invested in broadband expansion. Engaging stakeholders early in the process not only promotes inclusivity but also helps to leverage local knowledge and expertise, ensuring that the current state of broadband is accurately captured and proposed recommendations are practical and effective.

2.2 Demographic Research

Demographic research is a critical component of this study because it provides insight into the community's characteristics, needs and behaviors. Understanding key demographic factors such as population density, age, income levels and digital literacy helps inform where infrastructure investments are most needed and how broadband services can be effectively deployed. This data allows for a more targeted and equitable allocation of resources, ensuring underserved communities gain access to reliable internet services. Additionally, demographic insights guide future demand projections, enabling more strategic planning for scalable and sustainable broadband infrastructure development.

2.2.1 Population and People

The total population of Brooks County in 2020 was 7,076.[1] According to the 2023 American Community Survey (ACS), the Median Age in Brooks County was 38.1 years. Comparatively, the Median Age in Texas was 35.9 years. When looking at population by age and sex, the largest group within the county is Male, 25 to 29 years old, as shown in Exhibit 1. When looking at race and ethnicity in Exhibit 2, the largest demographic of the county is Hispanic or Latino.

Exhibit 3 shows that between 2012 and 2023, the percentage of people who had completed at least high school decreased by about 19 percentage points (from 45.8 percent to 26.5 percent). However, the percentage of those who had completed some college or an associate degree increased from 2012 (28.9 percent) to 2023 (60 percent). Finally, the percentage of those who completed their bachelor's degree or higher also increased from 2012 (0 percent) to 2023 (1.7 percent).

Also, 69.2 percent of the population in the county speaks a language other than English at home. Around 30.8 percent of the county speaks English only (Exhibit 4). Around 31 percent of the population lives with a disability (Exhibit 5).

[1] U.S. Census Bureau. (2023). RACE. Decennial Census, DEC Redistricting Data (PL 94-171), Table P1. Retrieved October15, 2023, from https://data.census.gov/table/DECENNIALPL2020.P1?g=050XX00US48043.

Exhibit 1: Population Distribution by Age and Sex, Brooks County, 2023

Brooks County, Texas	Percent Male	Percent Female
Under 5 years	0.0%	6.2%
5 to 9 years	6.2%	6.7%
10 to 14 years	6.8%	4.8%
15 to 19 years	6.4%	1.4%
20 to 24 years	12.5%	1.4%
25 to 29 years	12.7%	12.0%
30 to 34 years	7.7%	5.8%
35 to 39 years	4.9%	8.4%
40 to 44 years	8.0%	4.1%
45 to 49 years	5.3%	6.6%
50 to 54 years	5.3%	7.8%
55 to 59 years	3.8%	5.9%
60 to 64 years	6.4%	6.4%
65 to 69 years	2.8%	8.2%
70 to 74 years	3.5%	4.8%
75 to 79 years	3.5%	4.8%
80 to 84 years	1.7%	3.6%
85 years and over	2.7%	0.9%

Source: U.S. Census Bureau, U.S. Department of Commerce. (2023). Age and Sex. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S0101.

Exhibit 2: Race and Ethnicity, Brooks County, 2020

Population by Race and Ethnicity	Brooks County, Texas
Total	7,076
Hispanic or Latino	6,242
Not Hispanic or Latino	834
Population of one race	782
White alone	724
Black or African American alone	8
American Indian and Alaska Native alone	9
Asian alone	29
Native Hawaiian and Other Pacific Islander alone	0
Some Other Race alone	12
Population of two or more races:	52

Source: U.S. Census Bureau. (2020). HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE. Decennial Census, DEC Demographic and Housing Characteristics, Table P9.

Exhibit 3: Age by Educational Attainment, Brooks County, 2012-2023

Brooks County	2012	2023
Age by Educational Attainment		
Population 18 to 24 years		
Less Than High School Graduate	24.20%	11.80%
High School Graduate (Includes Equivalency)	46.40%	26.50%
Some College Or Associate Degree	29.40%	60.00%
Bachelor's Degree Or Higher	0.00%	1.70%
Population 25 Years And Over		
Less Than 9th Grade	24.50%	11.20%
9th To 12th Grade, No Diploma	17.10%	21.50%
High School Graduate (Includes Equivalency)	37.90%	31.60%
Some College, No Degree	12.30%	20.80%
Associate Degree	1.60%	0.50%
Bachelor's Degree	4.10%	12.20%
Graduate Or Professional Degree	2.50%	2.20%
Percent High School Graduate Or Higher	58.40%	67.40%
Percent Bachelor's Degree Or Higher	6.60%	14.40%

Source: U.S. Census Bureau. "EDUCATIONAL ATTAINMENT ." American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1501, 2012 & 2023

Exhibit 4: Languages Spoken at Home, Brooks County, 2023

Languages Spoken at Home	Brooks County
Speak only English	30.80%
Speak a Language Other Than English	69.20%
Spanish	69.20%
Other languages	0.00%

Source: U.S. Census Bureau, U.S. Department of Commerce. (2023). Language Spoken at Home. American Community Survey, ACS 5-Year Estimates Subject Tables, Table S1601.

Exhibit 5: Percent with a Disability Estimate, Brooks County, 2023

Census Variables	Total Estimate	With a Disability Estimate	Percent With a Disability Estimate
Total Civilian Noninstitutionalized Population	6,561	1,532	23.40%
SEX			
Male	3,118	652	20.90%
Female	3,443	880	25.60%
RACE AND HISPANIC OR LATINO ORIGIN			
White alone	3,460	739	21.40%
Black or African American alone	44	2	4.50%
American Indian and Alaska Native alone	0	0	
Asian alone	0	0	0.00%
Native Hawaiian and Other Pacific Islander alone	16	0	
Some other race alone	615	90	14.60%
Two or more races	2,246	701	28.90%
White alone, not Hispanic or Latino	499	49	9.80%
Hispanic or Latino (of any race)	5,960	1,481	24.80%
AGE			
Under 5 years	217	0	0.00%
5 to 17 years	1,078	120	11.10%
18 to 34 years	1,637	110	6.70%
35 to 64 years	2,393	597	24.90%
65 to 74 years	663	270	40.70%
75 years and over	573	435	75.90%

Source: U.S. Census Bureau, American Community Survey (ACS) 5-Year Estimates, 2023

The following is a collection of the most recent data provided by the BDO's Digital Opportunity Plan,[2] the NTIA's Digital Equity Act Population Viewer[3] and the U.S. Census.[4] Compared with the state of Texas, Brooks County has a lower percentage internet coverage for individuals with English proficiency, veterans and low-income households than the statewide share. The county's median household income was nearly 61 percent lower than the state's in 2023, yet the median cost per month for internet plans is approximately 14 dollars less than the statewide median cost. Furthermore, households in Brooks County had an approximately 2 percent lower share of one or more devices with high-speed internet subscription than statewide, and approximately 13 percent higher share of households with a smartphone only and high-speed internet subscription (non-exclusive to the Covered Populations).

[2] Texas Digital Opportunity Hub. (n.d.). https://www.digitalopportunityfortexas.com/interactivetdop
[3] U.S. Census Bureau, National Telecommunications and Information Administration. (n.d.). Digital Equity Act Population Viewer. https://mtgis-portal.geo.census.gov/arcgis/apps/webappviewer/index.html?id=c5e6cf675865464a90ff1573c5072b42
[4] Bureau, U. C. (2024, October 21). *U.S. Census Bureau homepage*. Census.gov. https://www.census.gov/

Exhibit 6: Covered Populations, Brooks County, 2019

Covered Populations	Texas	Brooks County
Veterans	5.1%	4.6%
Low-Income Households	19.3%	37.6%
Individuals Living With Disabilities	11.3%	22.1%
Individuals With Limited English Proficiency	12.8%	9.9%
Racial Or Ethnic Minorities	58.1%	92.9%
Age 60+	17.5%	25.2%
Incarcerated	0.7%	0.2%
Population In Households Lacking Fixed Broadband Availability	7.2%	38.1%

Source: U.S. Census Bureau, 2022 American Community Survey 5-Year Estimates; United States Census Bureau. (2019). Digital Equity Act Population Viewer, Texas Digital Opportunity Hub

Exhibit 7: Household Income and Internet Costs, Brooks County, 2023

Geography Name	Median Income	Median Cost of Internet Plans for the Geography
Brooks County	$25,058	$65/month
Texas	$63,826	$79/month

Source: Texas Digital Opportunity Survey (2023)

Exhibit 8: Share of Households with a Smartphone Only, Brooks County, 2023

Geography Name	Type of Device and Internet Service	Households	Percent of Households
Texas	One or more devices with High-Speed Internet Subscription	8,936,897	87.28
Brooks County	One or more devices with High-Speed Internet Subscription	2,070	85.37
Texas	Smartphone Only with High-Speed Internet Subscription	1,302,444	12.72
Brooks County	Smartphone Only with High-Speed Internet Subscription	355	14.63

Source: Texas Digital Opportunity Survey (2023)

Exhibit 9: Low-Income Individuals by Estimated Totals for Brooks County, 2012-2022

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Brooks	39%	38%	36%	40%	35%	42%	39%	41%	40%	38%	33%
Texas	28%	29%	29%	28%	27%	26%	26%	25%	24%	23%	23%

Source: U.S. Census Bureau, U.S. Department of Commerce. (2012 - 2022) American Community Survey S1701 | Poverty Status in the Past 12 Months

3 Outreach

3.1 Outreach Strategy

The objective of the outreach strategy outlined in this report was to engage key stakeholders identified in Section 2 and facilitate a constructive dialogue with community members regarding broadband needs, priority areas and their long-term vision for the community. The team engaged a diverse group of stakeholders, including local government entities, ISPs, community organizations and health care institutions, to gather critical insights into existing service gaps, challenges and future expansion plans. A well-executed outreach approach promotes collaboration, builds stakeholder support and contributes to the development of a comprehensive and sustainable broadband plan that addresses the community's specific needs, while advancing digital opportunity and fostering economic growth.

During the outreach process, the stakeholder team took a two-pronged approach to engagement by first providing a questionnaire beforehand and then engaging in a discussion regarding their experience and needs with broadband services in the area. The contents of the questionnaire were developed with the intention of gaining a greater understanding of the current state of broadband and tailored to fit the public/private nature of the institution being interviewed.

Key Takeaways:

- Brooks County applied for $25 million DOT grant for road improvements to support ranching, deer farming, and mineral industries.
- Major employment barriers include housing issues, childcare issues, and poverty.
- Faster internet in general is in high demand, as well as more broadband for remote and work from home opportunities.
- Brooks County ISD is the county's largest employer with approximately 25 percent of employees commuting from other counties.
- Brooks County has a robust fire department that would benefit from increased connectivity.
- Broadband connectivity should be prioritized around schools, starting with Brooks County ISD, where the need and potential impact are greatest.

Stakeholders

Below is a list of stakeholders that were contacted for this study. The entities contacted for outreach range from public organizations or public servants, private entities, educational institutions such as Independent School Districts (ISDs), medical institutions and ISPs.

Exhibit 10: Brooks County Stakeholders

Type	Title/Position	Entity/ Organization	*Contact Made	Survey Complete/ Meeting Held
Government	County and District Clerk	Brooks County	YES	NO
Government	County Judge	Brooks County	YES	YES
Government	Commissioner Pct. 1	Brooks County	YES	NO
Government	Commissioner Pct. 2	Brooks County	YES	NO
Government	Commissioner Pct. 3	Brooks County	YES	NO
Government	Commissioner Pct. 4	Brooks County	YES	NO

Type	Title/Position	Entity/ Organization	*Contact Made	Survey Complete/ Meeting Held
County Staff	County Attorney	Brooks County	YES	NO
County Staff	County Attorney Administrative Asst.	Brooks County	YES	NO
County Staff	Constable Pct. 1	Brooks County	YES	NO
County Staff	Constable Pct. 2	Brooks County	YES	NO
County Staff	County Sheriff	Brooks County	YES	NO
County Staff	County Sheriff Secretary	Brooks County	YES	NO
Government	District Court Judge	Brooks County	YES	NO
County Staff	District Attorney	Brooks County	YES	NO
County Staff	Deputy Clerk	Brooks County	YES	NO
County Staff	Deputy Clerk	Brooks County	YES	YES
County Staff	Deputy Clerk	Brooks County	NO	NO
County Staff	Deputy Clerk	Brooks County	YES	NO
County Staff	Fire Chief	Brooks County	YES	NO
Government	Mayor	City of Falfurrias	YES	NO
City Staff	City Administrator	City of Falfurrias	YES	NO
City Staff	City Secretary	City of Falfurrias	NO	NO
City Staff	City Attorney	City of Falfurrias	YES	NO
City Staff	Public Works Director	City of Falfurrias	YES	NO
City Staff	Chief of Police	City of Falfurrias	YES	NO
City Staff	Utilities Director	City of Falfurrias	NO	NO
Government	Municipal Court Judge	City of Falfurrias	YES	NO
City Staff	Police Chief	City of Falfurrias	YES	NO
School	Falfurrias Elementary Librarian	City of Falfurrias	YES	NO
Government	Executive Director	Coastal Bend COG	YES	YES
Government	Director of Planning and Economic Development	Coastal Bend COG	YES	YES
Government	Director of Emergency Management	Coastal Bend COG	YES	YES
ISP	President	Smartcom	YES	YES
ISP	Director	AT&T	NO	NO
ISP	Director	Foremost Telecommunications	NO	NO
ISP	Personnel	Gtek Communications	NO	NO
ISP	President	SmartCom Telephone	YES	YES
ISP	Personnel	Riviera Telephone Company	YES	NO

Type	Title/Position	Entity/ Organization	*Contact Made	Survey Complete/ Meeting Held
ISP	Director of Government Affairs – Inland Empire	Spectrum / Charter	NO	NO
ISP	Personnel	T-Mobile	NO	NO
ISP	Government Affairs	Verizon	YES	NO
ISP	Chief Operating Officer	VTX1 Communications / Valley Telephone Cooperative	YES	YES

**Attempts were made to contact stakeholders via email and/or phone calls to participate in the questionnaire; some stakeholders or representatives answered/ responded, as indicated in the table above. All others did not respond to repeated contact efforts.*

***These were contacted, and they referred me to someone to represent their city or county for them.*

Stakeholder Outreach Recommendations

Future stakeholder outreach in Brooks County should focus on strengthening partnerships that support infrastructure and economic development. With the county applying for a $25 million DOT grant to improve roads serving ranching, deer farming, and mineral industries, outreach should include local business owners, agricultural leaders, and transportation advocates. Highlighting the grant's potential to boost jobs and improve regional mobility will help build public and private support.

Addressing major employment barrier-housing shortages, childcare challenges, and poverty requires collaboration with housing authorities, community organizations, and employers. Outreach efforts should focus on identifying solutions like affordable housing projects and childcare support programs that directly address these challenges and help residents stay and work locally.

Broadband and internet access are among the highest priorities for both residents and institutions. Stakeholder engagement should begin with Brooks County ISD, the county's largest employer, as a central hub for expanding connectivity. Schools serve as excellent foundation points for developing broadband infrastructure that can later expand to homes, public facilities and remote workers in rural areas.

The county's robust fire department and under-resourced sheriff's office would both benefit from better internet and technology access. Outreach to public safety officials, first responders, and state partners should focus on securing funding and tools needed to improve communication, emergency response and coordination, especially in rural areas where challenges like human trafficking persist.

Lastly, building trust and collaboration across all sectors — education, public safety, health, business, and technology — will be key. Outreach should be rooted in transparency and community involvement, making sure residents understand the benefits of proposed improvements and feel included in shaping solutions that meet Brooks County's unique needs.

4 Gap Analysis and Community Needs Identification

4.1 Needs and Gap Analysis

Broadband has become an essential element of modern life, influencing key areas such as education, healthcare, remote work, and daily communication. In today's digital era, reliable and high-speed internet is crucial for individuals and businesses to fully participate in the economy. However, many communities continue to face significant challenges related to access, affordability, and adoption, which prevent them from realizing the full potential of the digital world.

To address these challenges, a thorough needs and gaps analysis is essential. This analysis evaluates broadband infrastructure across several key factors: coverage, pricing, capacity, and stakeholder input. It identifies underserved areas, especially in rural and hard-to-reach regions, and highlights barriers that impede access. By uncovering service gaps and assessing infrastructure needs, the analysis guides targeted investments aimed at improving service quality and reducing costs. Furthermore, it provides strategies to foster competition, lower prices, and ensure that all communities have access to high-quality, reliable broadband services.

PLEASE NOTE: The National Broadband Serviceable Location Fabric is a common data set of all residential and business locations (or structures) in the U.S. where fixed broadband internet access service is or can be installed. Each location in the Fabric is called a BSL, and the definition of a BSL is determined by the FCC. The Fabric is the foundational location database that is being used across several government programs, including the NTIA's BEAD program, the FCC's Broadband Data Collection, National Broadband Maps and more. CostQuest is the official contractor and provider of the National Serviceable Location Fabric data. Data used within this report was obtained from CostQuest and is Version 5 as of June 30, 2024. Version 5 data was announced as the data source for the Texas BDO's BEAD Subgrantee Selection Process. At the time of this report, the Texas BEAD Challenge Process is still ongoing and no Final Determination has been released to indicate the final list of eligible BEAD locations. Please be aware that ISPs may have continued construction and implementation of new service locations since Version 5, and the data within may be outdated by the time this report finalizes. Please conduct continuing conversations with potential partners to see where changes may have been made.

4.2 Needs Discovered from Stakeholder Engagement

Over the course of an intensive two-week engagement period, we conducted comprehensive discussions with a diverse range of stakeholders, including local government officials, business owners, broadband service providers, and community members, to identify the most critical broadband needs. These conversations provided valuable perspectives and highlighted key challenges related to broadband access.

By engaging directly with those most affected, we gained essential insights into issues such as infrastructure gaps, high costs, and inconsistent service quality across various regions. The feedback gathered from these interactions will inform the development of targeted strategies to improve broadband services, ensuring that the solutions are both inclusive and tailored to address the specific needs of the community.

- Brooks County applied for $25 million DOT grant for road improvements to support ranching, deer farming, and mineral industries.
- Major employment barriers include housing issues, childcare issues, and poverty.
- Faster internet in general is a high demand point, as well as more broadband for remote and work from home opportunities.
- Brooks County ISD is the county's largest employer with approximately 25 percent of employees commuting from other counties.
- Brooks County has a robust fire department that would benefit from connectivity.

4.3 The Determined Needs for Broadband in Brooks County, Texas

Access

Broadband access in Brooks County, Texas, is influenced by several factors, including the county's rural-urban distribution, the availability of metro and long-haul fiber networks, and the number of broadband providers across the region. These elements are essential in determining the connectivity available to residents, businesses, and community institutions.

Exhibit 14 illustrates the average number of broadband providers in Brooks County, highlighting significant variation in access to service providers. Areas near population centers, such as Falfurrias and the vicinity of Encino, have access to multiple providers, with some locations offering between two to three options. However, many of the rural areas, particularly those around San Isidro and Rachal, have access to only one or two providers. These rural areas often face higher costs and lower-quality service due to limited competition. The disparity in provider access across Brooks County underscores the need for more options to improve service quality and affordability, especially for residents in sparsely populated areas.

According to Exhibit 15, Brooks County is largely rural, with the majority of its population concentrated in communities like Falfurrias, Encino, and along major transportation routes such as U.S. Highway 281. The rural nature of these areas presents significant challenges for broadband infrastructure development. As seen in the maps, the spread-out population makes broadband expansion more costly, as providers are less incentivized to build in low-density areas. This situation highlights the need for targeted infrastructure investments to bridge the digital divide between rural and more densely populated areas in the county.

NOTE: 20 and Exhibit 21 contain data from FiberLocator. This data is included only if the ISP or infrastructure owner has chosen to make it public. While FiberLocator is a public source, it does not represent a complete view of existing broadband infrastructure, as some assets may not be listed. The information from these maps should be understood to be partial and incomplete, while also informing of certain existing infrastructure.

20 highlights the metro fiber network map for Brooks County, showing several key fiber networks from providers such as Zayo, Windstream, and Valley Telephone Cooperative. These networks primarily cover the more densely populated regions, including Falfurrias and areas along U.S. Highway 281. However, coverage gaps remain in the more remote rural parts of the county, such as areas around San Isidro and Encino, leaving many of these areas without access to high-speed internet.

Exhibit 21 displays the long-haul fiber network in Brooks County, which acts as the backbone for regional connectivity. These networks primarily follow major highways such as U.S. Highway 281, connecting Brooks County to broader internet backbones. However, these long-haul networks are not

designed for last-mile delivery, meaning many rural areas in the county still lack sufficient internet access. The absence of long-haul fiber infrastructure in much of the county highlights the need for additional investments to extend reliable broadband service to more remote locations.

Adoption

Broadband adoption in Brooks County, Texas, is influenced by several factors, including internet accessibility, the demographic composition of the population, and the availability of digital devices within households. These factors collectively shape the adoption rate and highlight areas where targeted solutions are necessary to improve broadband utilization.

Exhibit 13 displays the locations in Brooks County where BSLs lack internet access, showing that approximately 6 BSLs are without access to broadband, representing 2.32 percent of the county's total BSLs. Of these, 50 percent are residential locations, and the remaining 50 percent are business locations. The concentration of unserved BSLs in the more rural areas of the county significantly impacts broadband adoption. Residents and businesses in these areas are unable to fully access the benefits of reliable internet, hindering digital engagement and participation in essential online services, such as remote work, education, and telehealth.

Exhibit 19 reveals that the median age in Brooks County is 38 years. While this median age is slightly higher than the state average, a younger population is typically more inclined to embrace broadband technology. Nevertheless, there may still be pockets of the population that are less familiar with digital technologies. To support these individuals, targeted digital literacy programs are recommended to ensure that all residents can fully leverage broadband services for education, healthcare, and communication purposes.

Exhibit 16 indicates that 22.9 percent of households in Brooks County do not have a smart device, such as a smartphone, tablet, or computer. This lack of access to essential digital tools further limits broadband adoption, as those without devices cannot effectively utilize internet services. Initiatives to provide affordable or subsidized devices to households without them could significantly enhance broadband adoption, allowing more residents to connect to the internet and take full advantage of online services.

Affordability

The affordability of broadband in Brooks County, Texas, is influenced by several critical factors, including the number of broadband providers, median household income, and household size. These elements significantly shape the cost of reliable broadband access, especially in regions where competition is limited and household needs are higher.

Exhibit 14 illustrates the average number of broadband providers in Brooks County, showing significant variation in access across the region. Areas near Falfurrias and Encino have access to multiple broadband providers, offering more competition and potentially more affordable pricing. However, many rural areas, particularly to the south and east of Falfurrias, lack competition, with some areas having only one provider or none. The limited number of service options in these areas restricts consumer choice, often leading to higher prices for broadband services. This lack of competition and service options, especially in the more remote areas of the county, makes broadband less affordable, particularly for households that require higher bandwidth due to multiple users or home offices.

Exhibit 18 shows that Brooks County has a median household income of $20,247, which is lower than both state and national averages. This lower income exacerbates the affordability challenge in the county, particularly in rural areas like those in the southeastern parts of the county, where income levels are often

lower. In these areas, where broadband competition is sparse, affordability becomes an even greater issue. Lower-income households may prioritize other basic needs, such as healthcare, housing, and food, making broadband a lower priority despite its importance for education, healthcare, and economic opportunities.

Exhibit 16 highlights that 22.9 percent of households in Brooks County do not own a smart device, such as a smartphone, tablet, or computer. This lack of access to essential digital tools compounds the affordability problem, as even if broadband services were available at an affordable price, many residents would still be unable to access the internet due to the absence of devices. Without these devices, broadband adoption remains limited, even in areas where the infrastructure exists.

The combination of limited broadband provider options, lower median household incomes, and a significant device gap in Brooks County creates persistent affordability challenges. Residents in areas with fewer providers face higher costs for broadband, while lower-income households struggle to meet these costs. This highlights the urgent need for affordable, high-quality broadband services and targeted programs to reduce the digital divide in Brooks County, ensuring that all residents, regardless of income or household size, have access to reliable and affordable internet.

Rurality

Brooks County, Texas, is predominantly rural, as demonstrated in Exhibit 15, which shows the urban and rural areas by census block. This rural nature presents significant barriers to broadband deployment, as the dispersed population across the vast area makes infrastructure development costly and complex. Brooks County's population is spread thinly, with few population centers, which significantly impacts the feasibility for broadband providers to expand and maintain their networks.

Brooks County's geographic isolation further exacerbates the challenges residents face. For example, areas such as San Isidro and Alta Mesa lack access to reliable infrastructure, underscoring the dire need for improved broadband services. The nearest hospital is located in Falfurrias, a distance of about 30 miles from the rural parts of the county, making healthcare access more challenging, especially in emergency situations. Moreover, frequent storms in the area lead to widespread power outages, cutting off electricity and leaving residents without essential communication tools, thus exacerbating difficulties in accessing help during emergencies. The combination of long travel times and disruption of essential services during storms highlights the urgent need for reliable infrastructure, including better healthcare access and consistent communication systems across the county.

Unlike urban areas where demand for broadband services drives infrastructure investments, the low population density in Brooks County reduces the incentive for broadband providers to expand their networks. Exhibit 12 highlights this challenge by showing the concentration of unserved and underserved BSLs in the county. A staggering 96.9 percent of the unserved and underserved BSLs are located in rural areas. Of the 251 unserved BSLs, many are concentrated in areas south of Falfurrias, highlighting the persistent broadband gaps in these regions. These gaps prevent residents from accessing reliable, high-speed internet, which is essential for participation in the digital economy.

Exhibit 14, which displays the average number of broadband providers across the county, shows that areas near major roads and population centers such as Falfurrias and Encino generally have more broadband options, with access to two or more providers. However, rural areas further from these main routes, especially those in remote parts of the county such as San Isidro and Rachal, often have limited or no access to broadband providers. This lack of competition in these areas results in higher costs, slower speeds, and fewer choices for residents, creating barriers to broadband adoption.

Addressing broadband challenges in Brooks County requires targeted infrastructure investments to extend broadband availability to underserved areas. Expanding metro and long-haul fiber networks as shown in Exhibit 20 and Exhibit 21 will be essential in connecting rural parts of the county, particularly in the southern and western regions, where many residents currently lack access to reliable broadband. Without these investments, Brooks County will continue to face significant barriers to broadband adoption, preventing residents from accessing essential services like remote education, telemedicine, and economic opportunities that depend on internet connectivity.

Exhibit 11: Unserved and Underserved BSLs* in Brooks County, Texas

Level of Service	Locations
Unserved	251
Underserved	8

Topography

Brooks County, Texas, is characterized by its predominantly flat and low-lying terrain, which influences broadband infrastructure deployment in the region. The county's landscape is largely composed of rangeland, agricultural areas, and oil fields, with some gentle rolling hills located in the northern parts of the county near Falfurrias. The lack of significant mountain ranges or rugged terrain makes fiber optic cable deployment in most of the county more feasible compared to areas with steep elevations. However, the broad, open expanses and sparse population in many parts of the county create challenges in terms of cost-effective infrastructure expansion. Providers are often hesitant to invest in these areas due to the low density of potential customers, which increases the cost per mile for installation and maintenance.

In the northern parts of Brooks County, where the topography is slightly more varied, the land rises in elevation, but the terrain remains relatively manageable for broadband deployment. Falfurrias, the county seat, and surrounding areas such as Encino and Rachal are situated in regions where the land is elevated just enough to require extra considerations for infrastructure, particularly when installing fiber networks or wireless towers. While these areas do not face the steep topographical challenges of mountainous regions, the rural and dispersed nature of the population still requires significant investment in both infrastructure and service delivery to ensure connectivity for residents.

The southern and southwestern areas of Brooks County, which are close to the Viboras Oil Field and the Scott and Hopper Oil Field, are mostly flat but face difficulties related to the vast distances between settlements. The terrain here is suitable for broadband infrastructure but requires long stretches of fiber or wireless transmission lines to connect the more isolated households. The low-density population spread out over large rural expanses significantly affects broadband deployment, as providers often lack the economic incentives to build infrastructure to reach these isolated areas. This situation is exacerbated by the presence of oil fields and agriculture, where access roads may not always be well maintained or readily accessible for construction teams.

Finally, while the overall topography of Brooks County does not present significant natural barriers for broadband infrastructure, the county's rural, dispersed nature, combined with limited transportation access and low population density, complicates broadband service provision. These geographical challenges contribute to the unserved and underserved broadband locations in areas such as San Isidro and the western reaches near La Gloria. Addressing these challenges requires not only overcoming physical distance and logistical barriers but also finding effective ways to incentivize broadband providers to expand their services into these less profitable rural areas. The county's flat landscape, while not as

difficult for installation as mountainous regions, still demands targeted investments in infrastructure to achieve comprehensive broadband access.

Demand Points of Need in Brooks County, Texas

Exhibit 22 for Brooks County highlights multiple demand points of need for broadband infrastructure, which include critical facilities such as:

- 2 fire stations/emergency management locations (red circles).
- 1 local law enforcement location (indicated by a blue circle).
- 23 Texas Colonias locations (indicated by green circles).
- 250 unserved BSLs (purple shaded areas).

These demand points are distributed across the county, with many situated in areas classified as either unserved (purple) or underserved (green) for broadband access. The presence of critical services in broadband-deficient areas emphasizes the immediate need for reliable broadband connections to support emergency response, law enforcement operations, and other essential community functions.

Improving broadband access in these regions would greatly enhance public safety, communication for first responders, and the ability of local government and community organizations to deliver essential services. These improvements are particularly important for the rural population of Brooks County, ensuring that all residents — especially those in remote or underserved areas — have access to the tools needed for personal development and community engagement. Strengthening broadband infrastructure in these areas would enhance the resilience of Brooks County by enabling more effective service delivery and fostering economic and social opportunities.

Funding Opportunities under Enforceable Commitments

Certain areas of each county across the country have been provided various funding opportunities to help serve the underserved and/or provide broadband infrastructure. There is a dedicated plan in place to serve these designated areas in the near future. Access to infrastructure is the primary concern for addresses with limited, or no, high-speed broadband. Once addresses are covered by funding like the programs below, then the issues, and therefore next-step solutions, can then shift towards adoption, competition, and digital opportunity.

- **Enhanced A-CAM (Valley Telephone Cooperative)**: The Enhanced A-CAM program, facilitated by Valley Telephone Cooperative, is another important funding initiative benefiting Brooks County. This funding is aimed at expanding broadband infrastructure in more rural sections of the county. By improving the availability of high-speed internet, it will help reduce service gaps and ensure more residents and businesses can access the connectivity they need for both personal and professional purposes.

These funding initiatives are crucial for improving broadband access in Brooks County, particularly in underserved and rural areas. The projects will foster enhanced connectivity, providing residents with the necessary tools for remote work, online education, telemedicine and access to government services. As these initiatives continue to roll out, Brooks County will be better positioned to bridge the digital divide, ensuring that all residents have reliable access to high-speed internet, regardless of location.

For further details on these funding opportunities, refer to Section 7: Digital Opportunities Strategy and Needs Identification, which provides a comprehensive breakdown of each funding source and its expected impact on Brooks County's broadband infrastructure.

Areas of Need in Brooks County, Texas (See Exhibit 23)

Following the enforceable commitments, the remaining areas of need in Brooks County primarily consist of locations that are still considered unserved or underserved. These areas are crucial to address for broadband expansion and are eligible for coverage under the BEAD program, which aims to provide initial access to broadband infrastructure. The areas highlighted in the map indicate the current gaps in broadband access across the county.

- **Unserved Areas (Purple Squares):** These locations in Brooks County are identified as having no broadband service meeting minimum standards. The map highlights 133 unserved BSLs, accounting for 95 percent of the total unserved and underserved BSLs in the county. These areas are without reliable internet access, which significantly limits residents' ability to participate in the digital economy, access online education, or take advantage of telehealth services. The lack of broadband in these areas creates a substantial barrier to personal and economic development, making them a top priority for broadband infrastructure investments.
- **Underserved Areas (Green Squares):** These regions in Brooks County have some form of broadband access, but the service does not meet the full connectivity needs of the population. The map highlights seven underserved BSLs, representing 5 percent of the total unserved and underserved BSLs in the county. Although these areas have broadband, the service may be slow, unreliable, or insufficient to support modern digital demands such as remote work, e-learning, and healthcare services. Addressing these gaps would help improve service quality and meet the rising demand for high-speed internet.

The widespread presence of both unserved and underserved areas across Brooks County highlights the urgent need for expanded broadband infrastructure. These gaps in service not only hinder residents' access to essential services but also limit the county's overall economic potential. Targeted investment in broadband infrastructure is critical to ensuring that all residents and businesses have the reliable connectivity necessary to thrive in an increasingly digital world.

Mapping Analysis of Brooks County:

The maps of Brooks County illustrate the county's unique and challenging geographical composition, with all data concentrated within a single census tract. The uniformity in the maps is significant, as it highlights the widespread and severe lack of broadband access across the county.

Despite showing little variation in the data legend, the consistent mapping reinforces the pressing need for improved connectivity throughout the region. The absence of distinct variations in the data further emphasizes the extent of the broadband gap, underscoring the urgency for targeted efforts to expand reliable broadband access in Brooks County.

4.4 Evaluating the Potential Broadband Needs

Exhibit 12: Unserved and Underserved BSLs in Brooks County, Texas

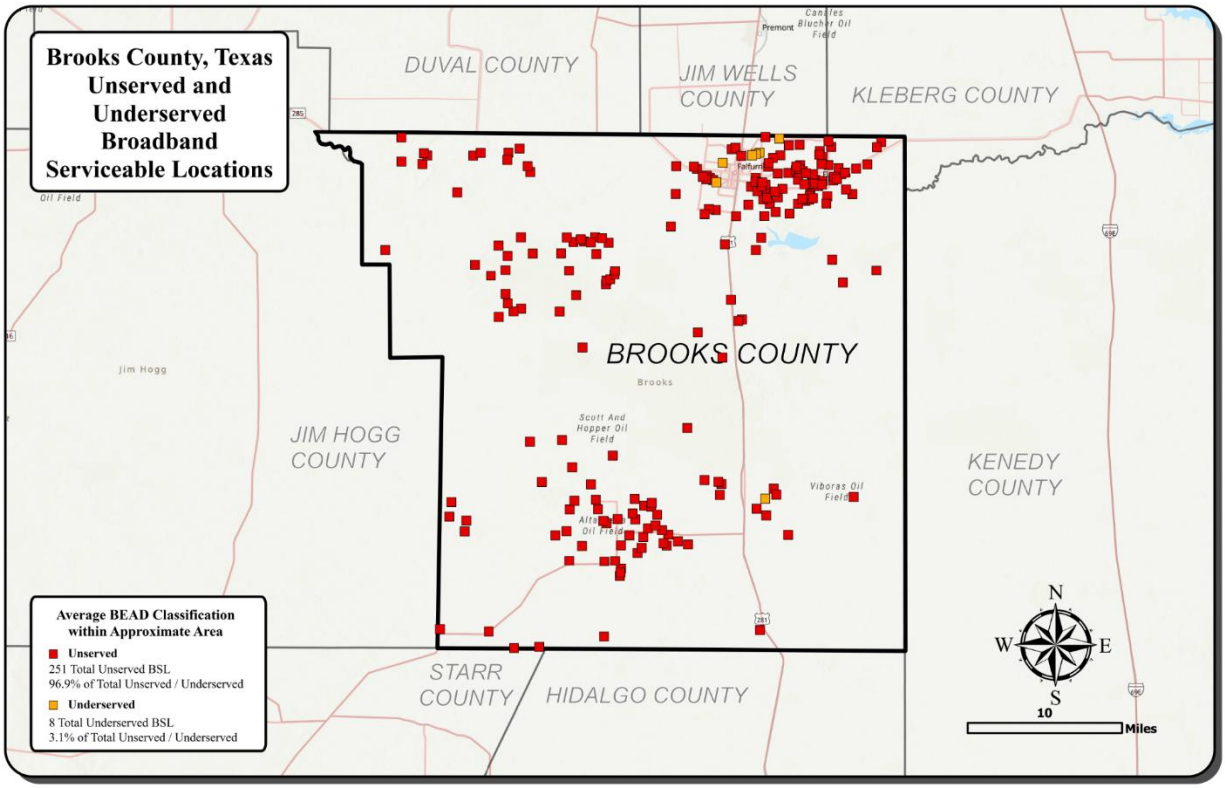

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Exhibit 13: Count of BSL without Internet Access in Brooks County, Texas

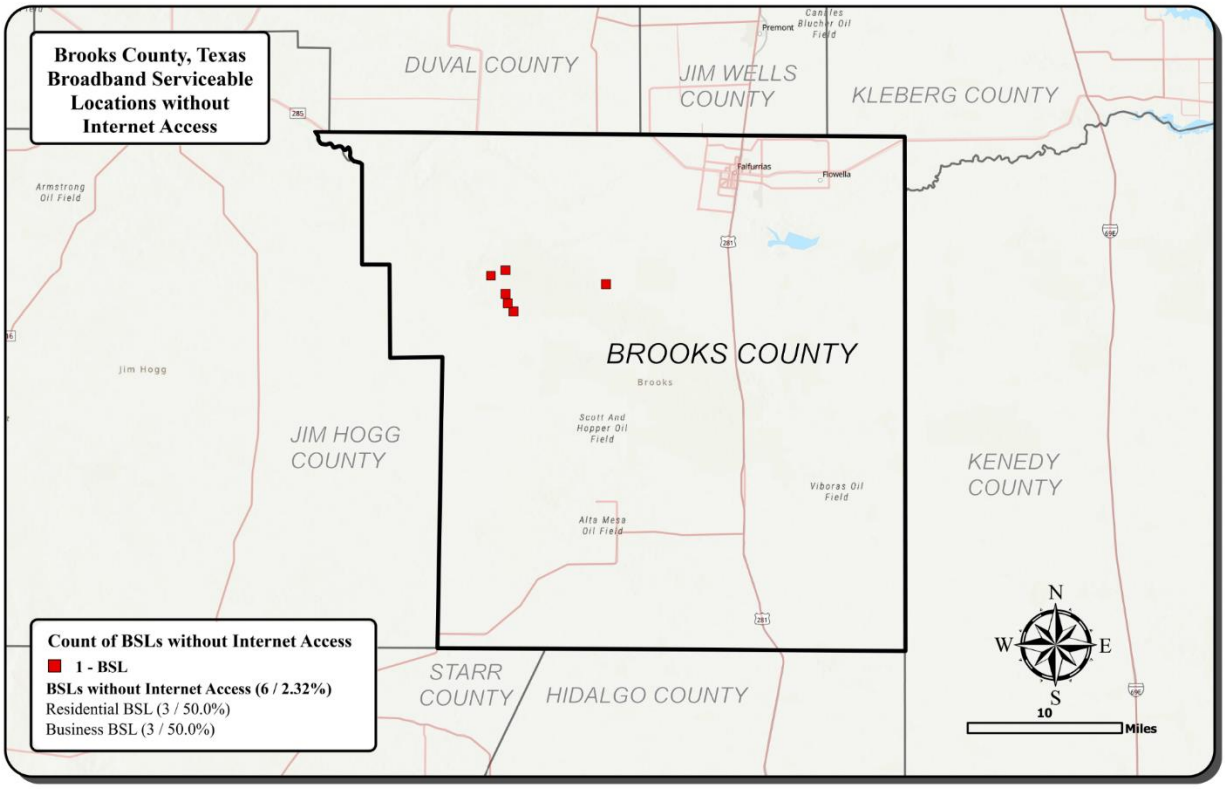

Exhibit 14: Average Number of Broadband Providers within Brooks County, Texas

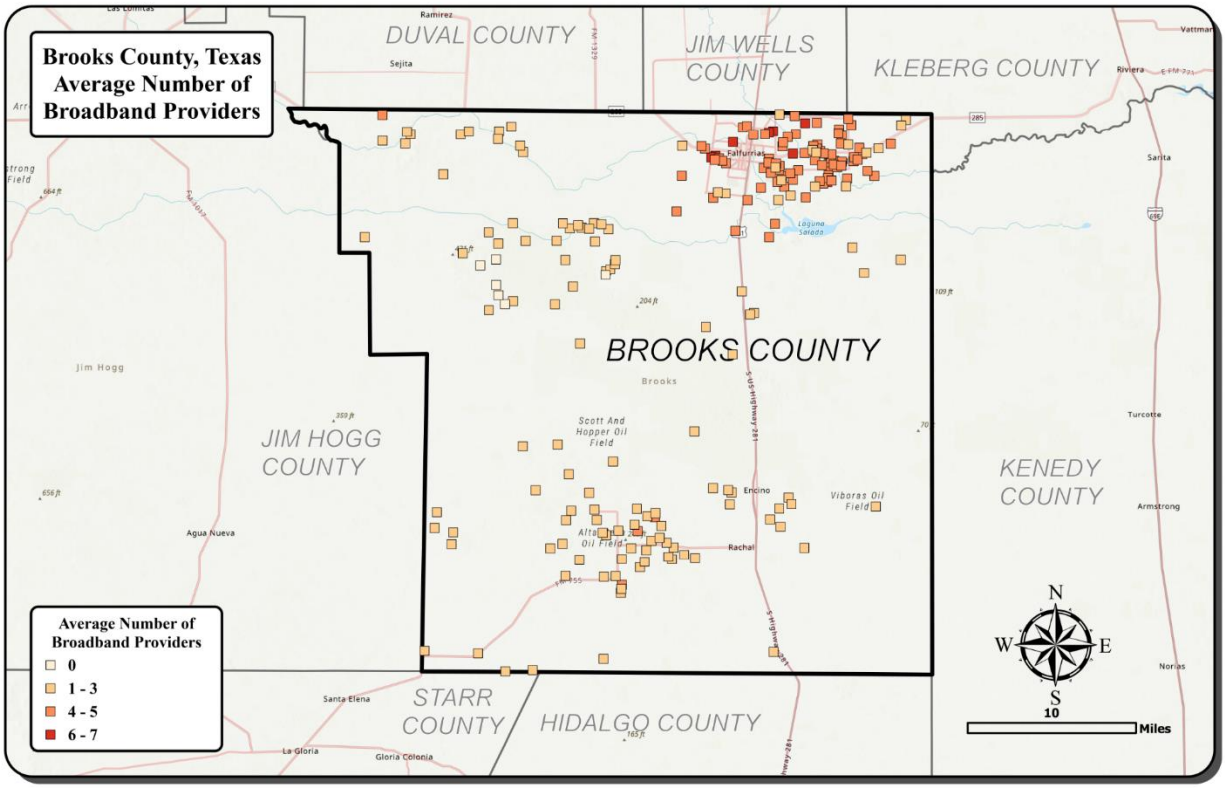

Exhibit 15: Urban and Rural Areas in Brooks County, Texas

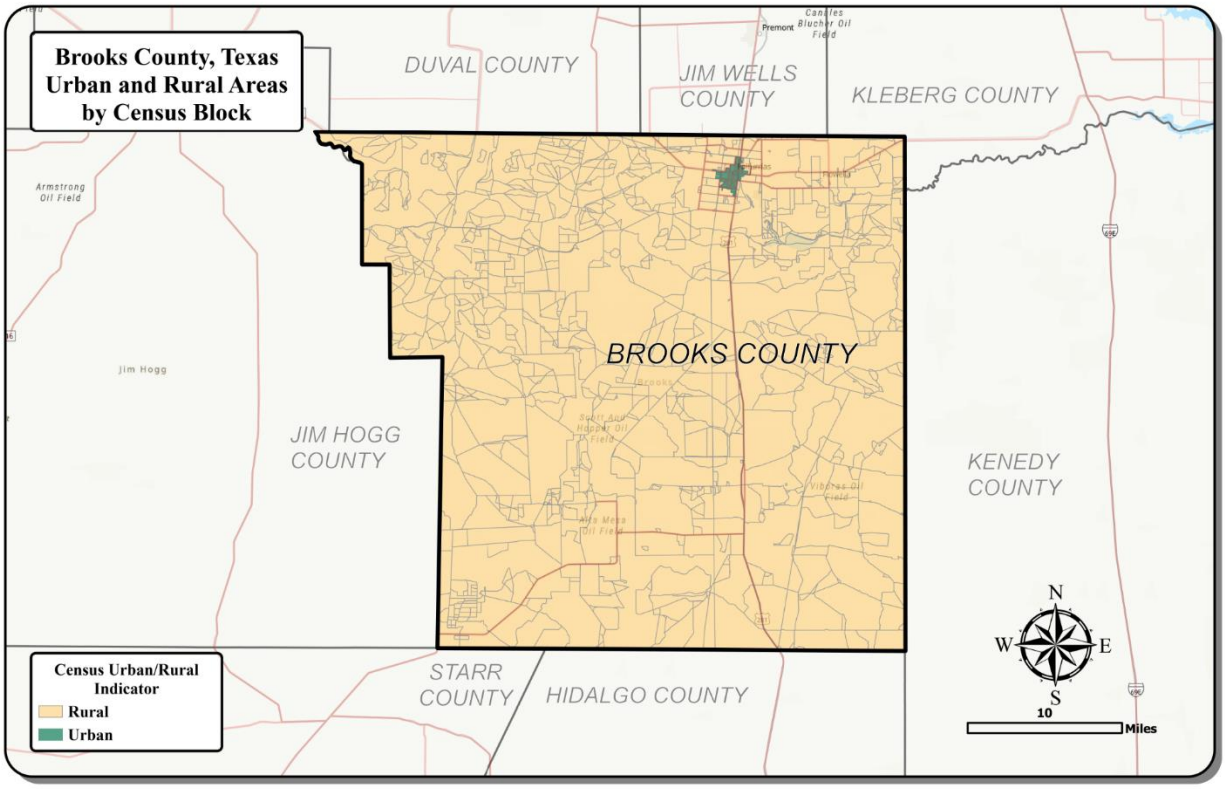

Exhibit 16: Percent of Households without Smart Devices in Brooks County, Texas

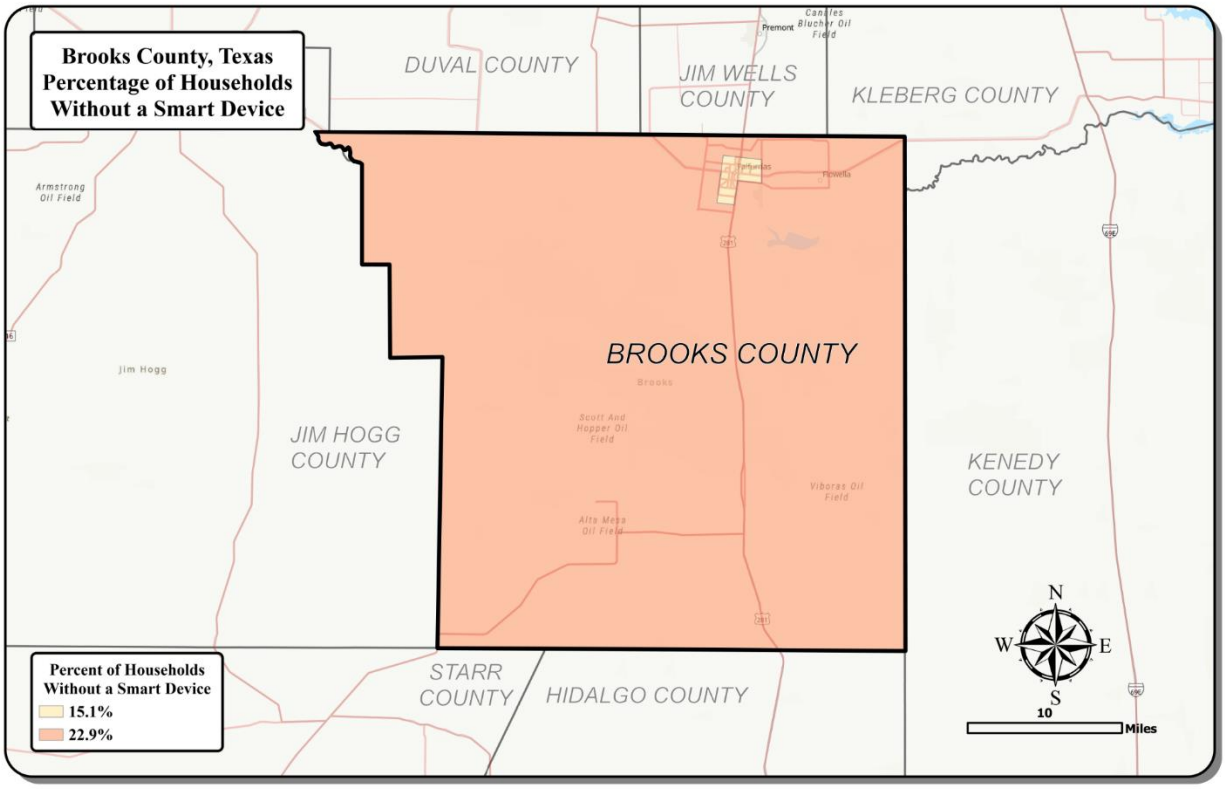

Exhibit 17: Average Household Size in Brooks County, Texas

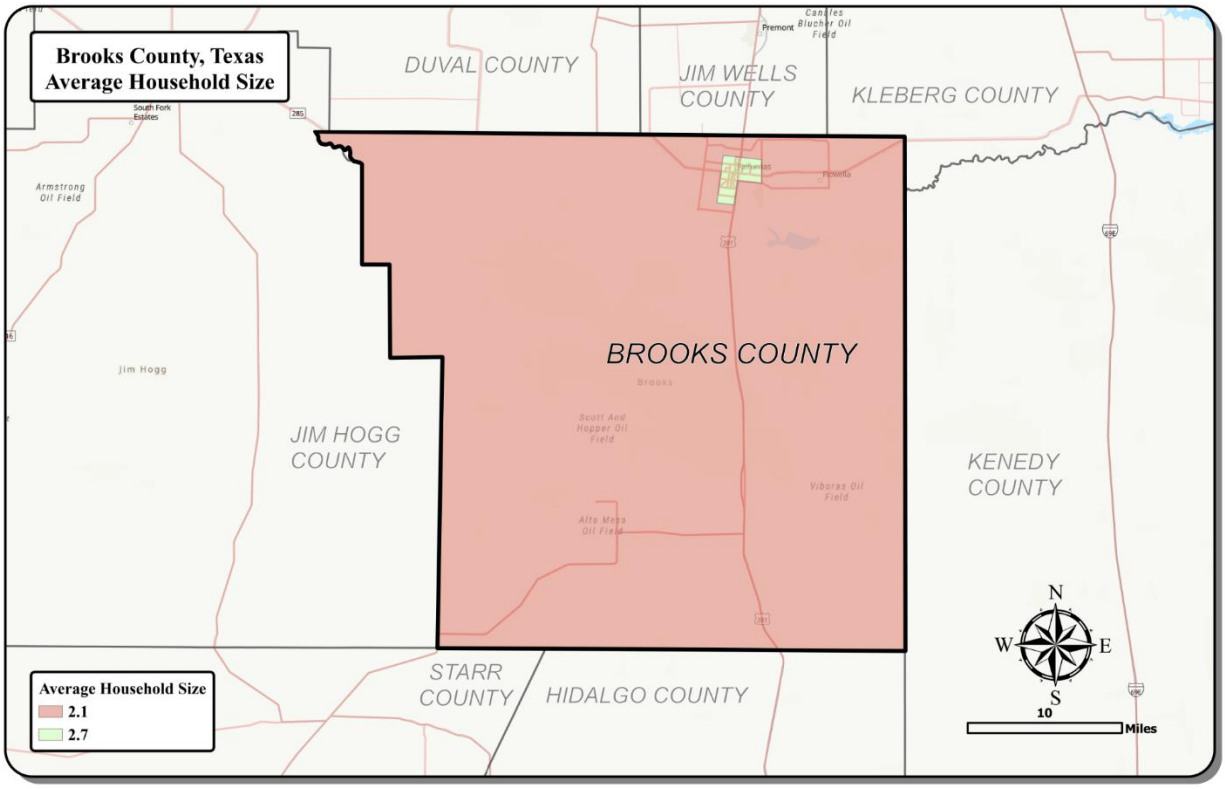

Exhibit 18: Median Household Income in Brooks County, Texas

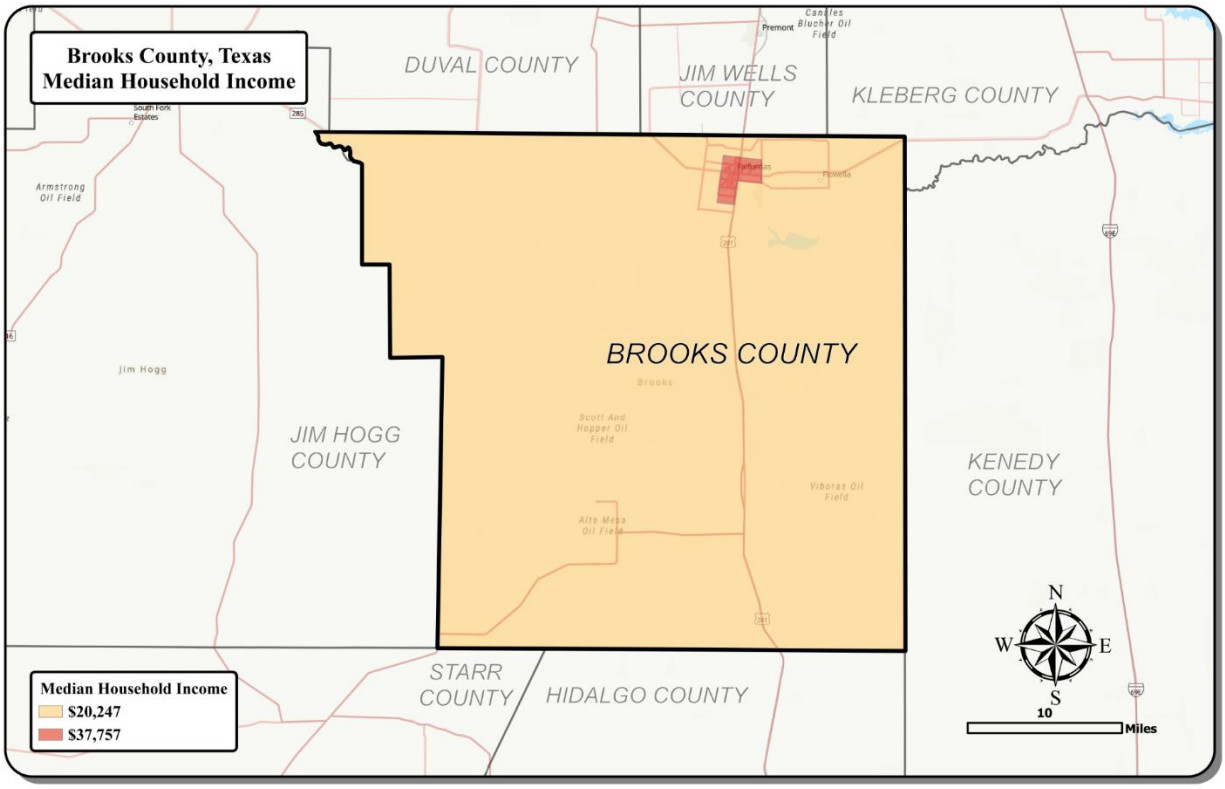

Exhibit 19: Median Age in Brooks County, Texas

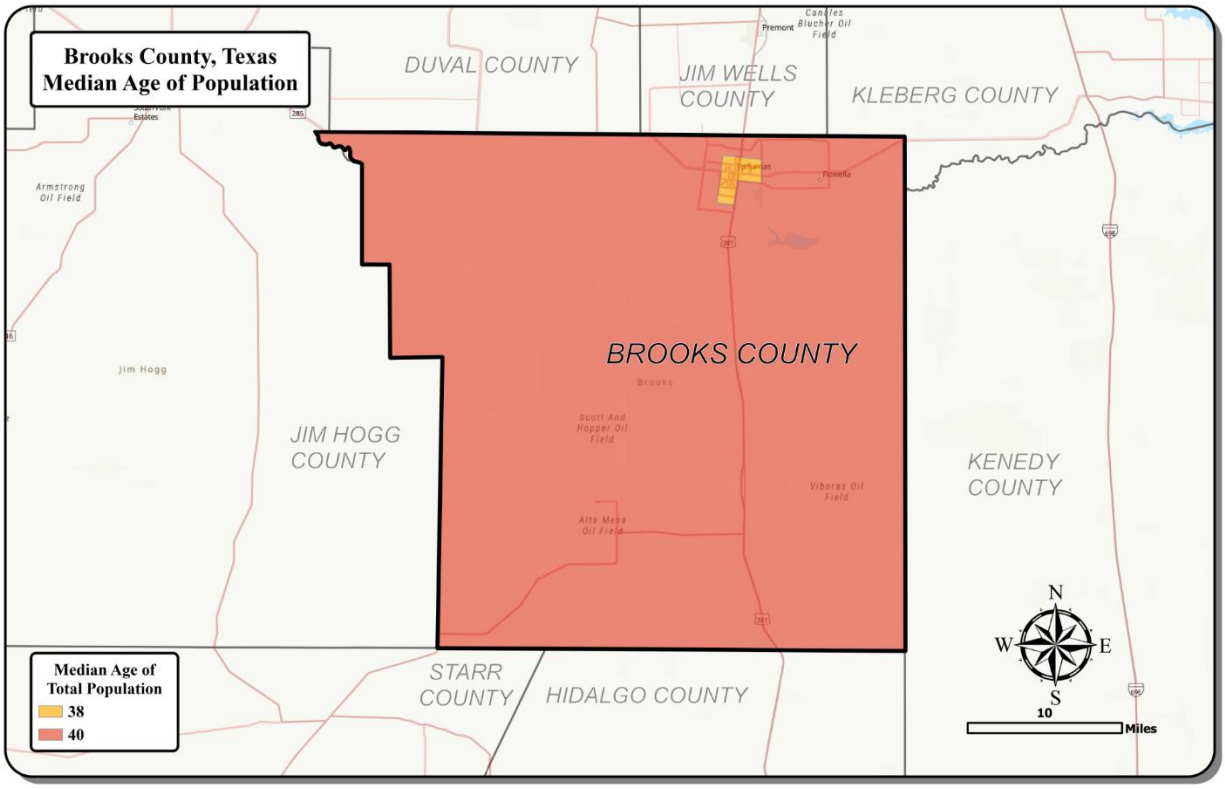

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Exhibit 20: Metro Network Fiber in Brooks County, Texas

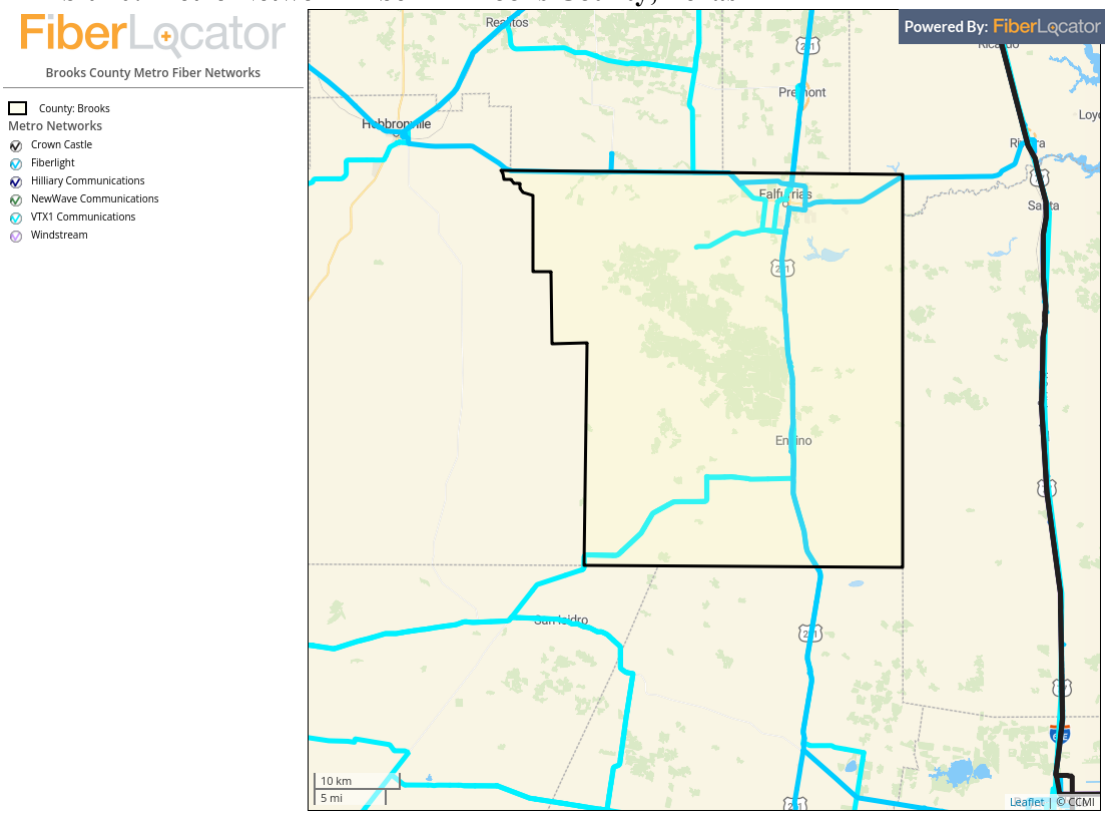


Exhibit 21: Long Haul Fiber Network in Brooks County, Texas

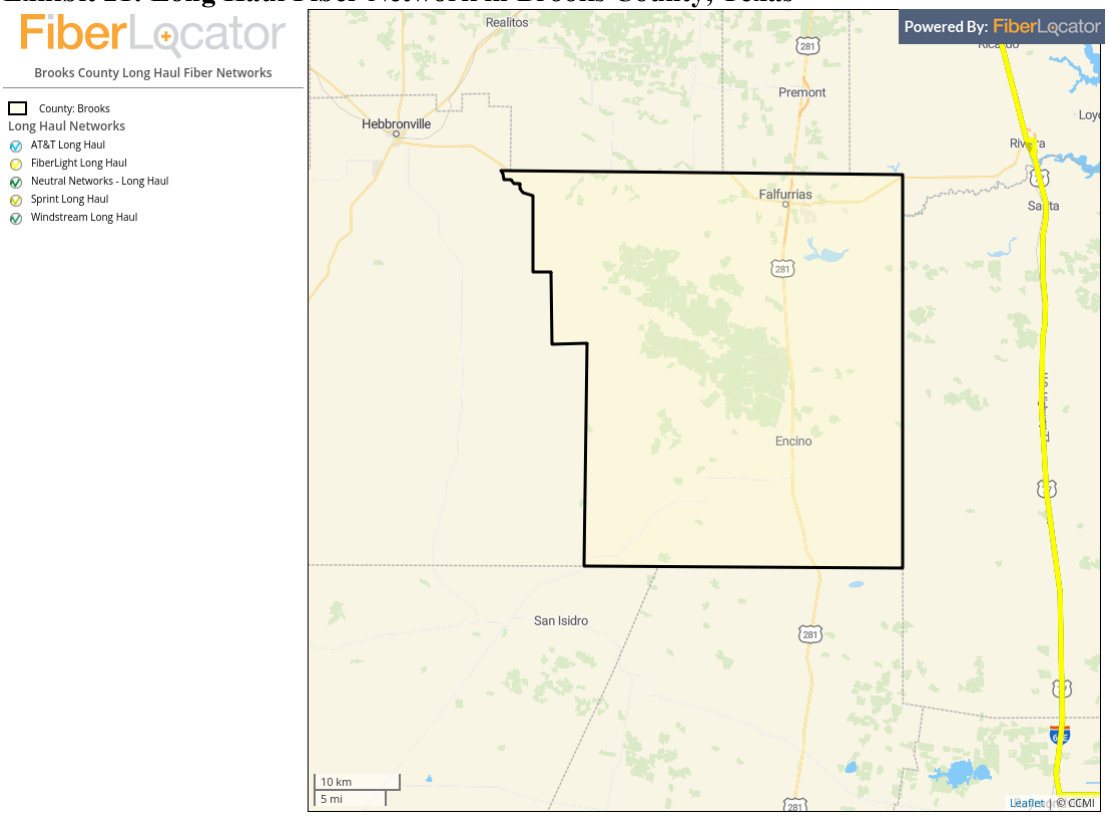


Exhibit 22: Demand Points of Need in Brooks County, Texas

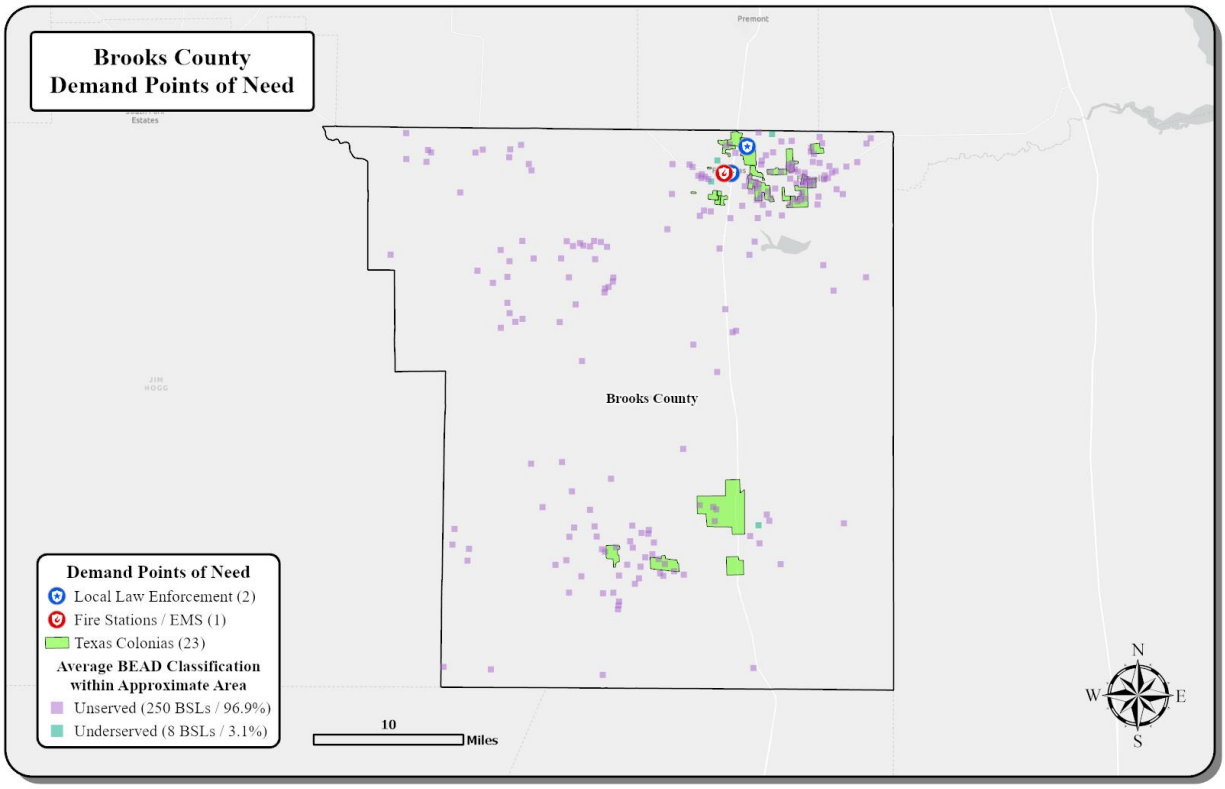
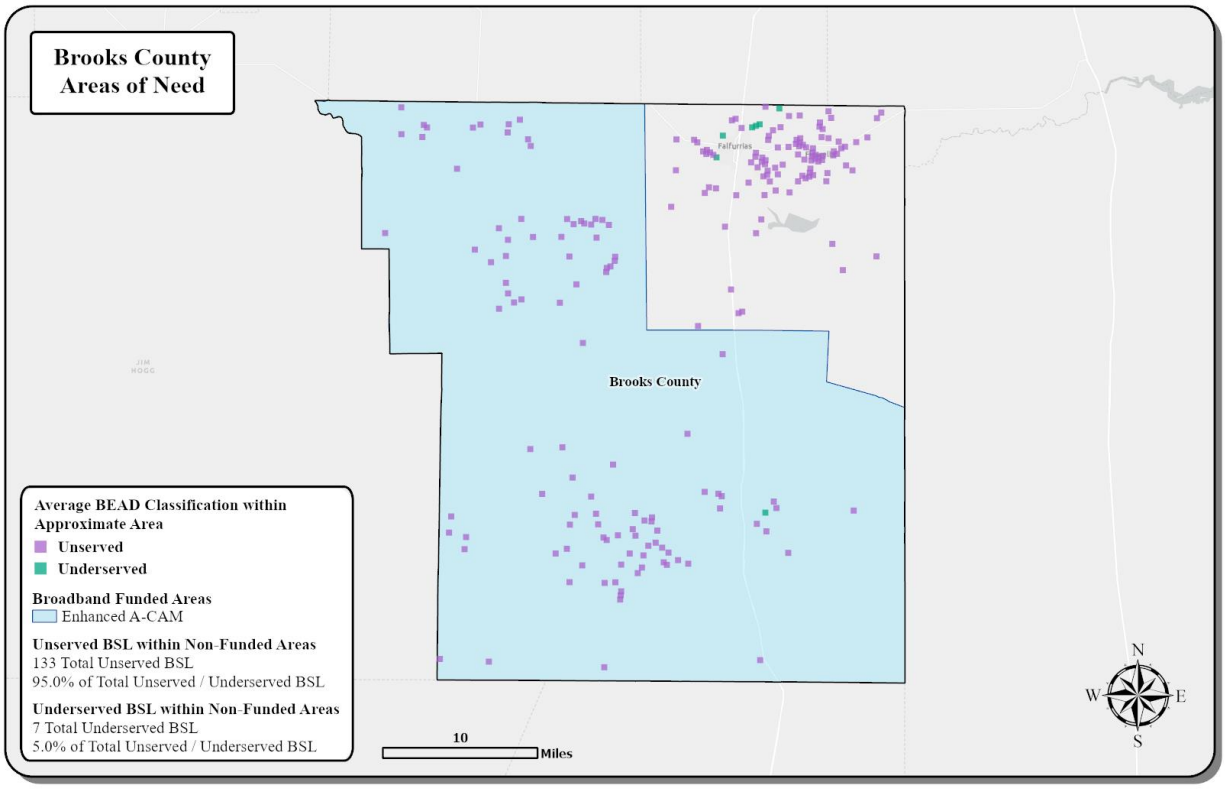


Exhibit 23: Areas of Need in Brooks County, Texas



5 P3 Identification and Analysis

When ISPs work together with local governments to share responsibility for operating and maintaining broadband infrastructure, the relationship is generally referred to as a Public-Private Partnership, or "P3". These partnerships between county governments and private entities can take a wide range of forms. It is helpful to think of these variations as a spectrum where one extreme is a fully publicly owned utility model and the other is a hands-off approach that allows the private sector to invest and expand at their own discretion. Even in the latter, the public agency is still involved, such as providing and approving building permits. The sweet spot for most communities falls somewhere in the middle, particularly if grants are needed for the improvements.

This service identifies opportunities and options for local public jurisdictions to establish formal and informal relationships and partnerships with private providers. The research outlines the process of identifying and developing P3 opportunities while detailing the respective comparative advantages from both these public and private arrangements. Possible P3 benefits can include operational capacity, more complete coverage, and lower construction and service costs for the Community. Potential risks to the community from the identified P3 opportunities are outlined alongside advantages resulting from the identified potential P3s. Preparation for the facilitation of RFEIs for partnering opportunities is also included. Through this process, one of the results is helping the BDO reach a goal of 99 percent coverage of unserved BSLs through coordinating P3 relationships throughout the county.

5.1 Business Model Options

5.1.1 Considerations for Business Model Selection and Partnership

Improving broadband often entails building, operating, and maintaining new infrastructure to provide a better end-user experience. While private ISPs play a role in the deployment of most broadband infrastructure improvement projects, public agencies are also involved in the process. To better gauge the level of participation in the improvement process of broadband infrastructure, it is important to understand what is available to public agencies.

Models have been developed to help local governments understand the opportunities and risks associated with the different ways in which they can participate. The information in this section will outline the process to identify and determine what role leadership thinks is best for Brooks County.

As one moves along the continuum from the fully public side over to the fully private end, the share of responsibility in the complexity of the model shifts. When assessing the degree of governmental participation, the municipal broadband utility model ranks highest for complexity and involvement. Texas law includes some barriers and restrictions on the utility model (Texas Utility Code § 54.201), however, it is important to note that these restrictions do not prevent local governments from forming a P3 and are a viable option.

Decisions regarding public involvement are often based on costs, budgetary or bond limitations, staff capacity, and political will. Understanding these distinctions and how they fit the county can help leadership make a knowledgeable choice on which direction to pursue, should it become advantageous to enter into a P3 for broadband improvements.

5.1.2 Ownership and Operations Models

To better understand the options Brooks County must explore for broadband infrastructure improvement, it is helpful to define the components of a network. A broadband network can be summarized into five basic components which one party or the other must be responsible for building and maintaining:

(1) **Right of Way (ROW) —** The physical real estate where the network must be built.
(2) **Middle-Mile Network Infrastructure —** The arterial portion of networks that brings internet traffic from last mile networks to connect to the internet via interconnection facilities called Points of Presence or internet exchanges.
(3) **Last-Mile Network Infrastructure —** The capillary portion of a network that distributes internet connectivity to homes and businesses in the community from the provider(s).
(4) **Operation of the Infrastructure —** The activities associated with running a commercial network, inclusive of monitoring network traffic, responding to outages, maintaining the equipment, providing services, and the cable plant that enables the network to function and connect to the internet.
(5) **Customer Service —** The activities associated with connecting customers to the network, troubleshooting and addressing any issues the end-user may experience with the service, billing for the service and collecting/processing payment.

One entity does not have to own, operate, and maintain all five components of a network – that is not usually the case. Typically, there are several participants from both the public and private side involved in the ownership and operations of these components. Moreover, one agency does not have to own and operate the infrastructure – for example, many communities' own infrastructure but contract out the operations.

Once a broadband infrastructure opportunity has been identified, community leaders should begin to define their degree of desire in assuming responsibility for financially and/or operationally within such a venture. If private sector partners could be involved, the public agency's intentions are important to better tailor their outreach to the private sector via a formal channel, such as an RFEI.

The matrix within Exhibit 24 outlines how responsibility for these five components can be delineated between a private and public partner. Within the table, the columns represent each components described above, while the rows consist of the following five broad categories of P3 structures commonly implemented:

(1) **Full Municipal Broadband —** Texas municipalities and counties who consider this model will need to fully understand the state's barriers. As a frame of reference for funding, full municipal models rely on the revenue from the network to cover building and operational costs. These are often through Revenue Bonds as opposed to General Obligation Bonds, where the revenue pays back all the incurred costs and produces additional revenue. However, a full feasibility study is usually required by financing institutions to determine if the network can sustain itself and repay the debt over time.
(2) **Publicly Owned, Privately Serviced —** This model can be thought of as a workaround for communities with the political will to construct their own infrastructure, but do not have the full resources to operate the network. In these networks, the responsibility for funding and building a network is shouldered by the public entity, (e.g. via bond issuance). However, a private company is contracted to operate the infrastructure and provide customer service.
(3) **Hybrid Ownership —** In this model, both the public and private entities contribute capital to build a network, with the public entity building middle-mile infrastructure and the private entity

building last-mile infrastructure. This model has the benefit of making it easier from a technical standpoint for a community to partner with more than one last-mile builder/provider but is also attractive to a private partner for eliminating their cost to build middle-mile to reach the neighborhoods in need of service.

(4) **Private Developer Open Access —** This is an attractive model for communities because it limits the investment they must make into building network infrastructure. It also helps promote a consumer-friendly environment wherein customers of the network have access to more than one option for service providers. However, for this to be financially feasible for both the private developer who builds the network and enterprises providing services, certain metrics must be met, which vary from company to company. In general, this model tends to require both a higher density of potential customers per road mile, as well as a higher overall number of customers. Remote, sparsely populated communities may not find this model feasible to implement.

(5) **Full Private Broadband —** This is the most hands-off approach model for a public agency as the contribution to a partnership by a public entity consists only of ROW policies that are "friendly" to broadband deployments. Examples include expedited permitting processes and Dig Once ordinances requiring the placement of empty conduit usable for future network deployments.

Exhibit 24: Request for Expressions of Interest Matrix

	Own ROW/Utility Infrastructure	Own Middle Mile	Own Last Mile	Operate Infrastructure	Service Customer
Full Municipal Broadband	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)
Publicly Owned, Privately Serviced	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility)	Public Entity (City or Utility) Service Provider(s)	Service Provider(s)
Hybrid Ownership	Public Entity (City or Utility)	Public Entity (City or Utility)	Service Provider(s)	Service Provider(s)	Service Provider(s)
Private Developer Open Access	Public Entity (City or Utility)	Private Developer	Private Developer	Private Developer	Multiple Service Providers
Full Private Broadband	Public Entity (City or Utility)	Service Provider(s)	Service Provider(s)	Service Provider(s)	Service Provider(s)

5.1.3 Accessory Models

In relatively rural and sparsely populated counties, such as Brooks County, it is often the case that the publicly owned, privately serviced and the hybrid ownership P3 models are both politically and financially challenging. Even if financial modeling shows a reasonable return on investment (ROI) through Irrefutable Right of Use (IRU) agreements with private providers, proposing a bond initiative or

using tax dollars might not be the most politically viable option for the community and its leaders. Fortunately, should this be the case, communities within Brooks County are not without recourse should they choose to pursue a full private broadband model. So-called Accessory Models, which leverage the community's inherent control of the ROW and need for internal connectivity, can still make a positive impact via a Dig Once ordinance.

Accessory Model Overview

In addition to the need to facilitate improved broadband deployments, local governments are also recognizing the need to implement public policy initiatives that are designed to improve the quality of street cut repairs as well as encourage joint use of facilities. Strategies used by these agencies generally fall into three categories: incentives, fees, and regulations. Examples of incentive-based policies include providing financial incentives for:[5]

(1) Using trenchless technology where technically suitable and requiring justification for not using trenchless technology should the agency deem it suitable.
(2) Performing higher quality pavement cut repairs or making smaller and/or less damaging cuts.
(3) Coordinating with other utility companies to share trenches or underground resources.

Examples of fee-based policies include:

(1) Assessing appropriate fees for pavement degradation.
(2) Assessing appropriate permit fees.
(3) Implementing a lane rental fee to encourage utility companies to restore traffic as quickly as possible.
(4) Requiring a deposit prior to beginning work to protect against poor quality repairs.
(5) Assessing penalties within a specified period for non-compliance or for failed repairs.

Examples of regulation-based policies include those that do not require fees nor provide incentives, but place requirements on the contractor regarding quality of work and restrictions on when and where trenching can be done. Examples of this type include:

(1) Establishing moratorium periods that restrict trenching in new and newly resurfaced pavements for a specified time.
(2) Requiring the pavement repair to encompass a larger area than simply the area of the trench.
(3) Enhancing inspections and enforcement of specification requirements.
(4) Requiring agency-owned utilities to meet repair quality standards and all other policies established for private utility companies.

Dig Once Ordinances

Brooks County is within its authority to preserve the physical integrity of its streets and state routes, control the orderly flow of vehicles and pedestrians, and manage the gas, electric, water, cable, broadband, telephone, and other facilities that crisscross its streets and public ROW. In addition, the county can focus on efficiently using public ROW for a variety of infrastructure and utilities to provide public services; advance their goal of increasing opportunities for access to traffic control,

[5] "Pavement Utility Cuts." (2018 April 19). Federal Highway Administration (FHWA). Retrieved May 25, 2019, from https://www.fhwa.dot.gov/utilities/utilitycuts/man01.cfm

communication, and broadband services; limit the frequency of street closures and the cutting of public streets; and reduce road degradation caused by repeated boring and trenching of public ROW.

The county can start to require all street construction permit applications involving directional boring or open trenching within a public ROW to include the co-location and installation of conduit owned by the entity simultaneously with the applicant's street construction activity. This is commonly known as a "Dig Once" or a co-location policy. Timely placement of empty broadband conduit, which is conduit for fiber-optic cables that support broadband or, where appropriate, wireless facilities for broadband service, can dramatically reduce costs. The National Broadband Plan noted that "the cost of running a strand of fiber through an existing conduit is 3-4 times cheaper than constructing a new aerial build." By saving costs, providers may be able to speed up network upgrades, thereby expediting better end-user experience.

The cost of building or upgrading a network in areas where streets need to be dug up is substantially higher than the cost of building or upgrading a network where there is sufficient empty space in the conduit that was placed with foresight years earlier. As such, a co-location/Dig Once policy is important because it gives the jurisdiction the ability to create assets, or "broadband currency," which are a key driver of enhanced broadband and can be a valuable contribution to a P3 agreement with a private service provider. More importantly, it is a very low-cost path to create assets that can drive appealing outcomes. If it is done well, it can allow the county to maintain control of its own broadband landscape.

A co-location or Dig Once policy is "a broadband deployment policy focused on increasing coordination between government agencies and utility companies to decrease the frequency of highway or street excavation." These policies aim to facilitate joint trenching cost savings and promote broadband infrastructure improvements are considered alongside other infrastructure and public works projects. To this end, these policies encourage or require that every infrastructure project includes notification and facilitation of opportunities to lower the costs of broadband infrastructure investment. Localities can add connectivity standards to their building codes, promoting that new constructions are equipped with broadband access.

There are three main benefits to Dig Once policies:

(1) Lowering costs of infrastructure deployment when completed in conjunction with other infrastructure improvements.
(2) Promoting and facilitating integration of broadband infrastructure as part of local and regional economic development initiatives.
(3) Providing a meaningful contribution to future P3 agreements with private providers, potentially lowering their cost to deploy fiber optic network plant by a substantial amount.

The Federal Highway Administration has listed several best practices for Dig Once policies, noting that Dig Once practices have been "recognized by state and local stakeholders as sensible solutions to expedite the deployment of fiber along main routes when implemented as part of a cooperative planning process."[6]

[6] https://www.fhwa.dot.gov/policy/otps/successprac.pdf

Middle-Mile "Broadband Currency"

If Brooks County has or plans to install any broadband infrastructure, this can be used to attract ISPs to the county. Examples of how this may be beneficial include:

- If the county or member cities decide to build a fiber ring for internal connectivity of their facilities, extra capacity can be built, which could be offered to an ISP (for a lease rate that could reduce their deployment costs).
- Requiring the addition of empty conduit/duct banks to Capital Improvement Projects is a cost-effective way of creating infrastructure that can be used in the future by ISPs to dramatically lower deployment cost per household passed. This can include new developments, roadwork projects, bridge and sidewalk builds.
- Utilizing Dig Once policies can develop an inventory of conduit that can also be offered to ISPs to provide a more affordable way to deploy broadband improvement infrastructure (e.g., via a lease arrangement).

Exhibit 25: Accessory Model Table

Accessory Model	Benefits	Drawbacks	Investment
Ordinance and/or Policy (e.g., Dig Once)	Quick and easy to put in place with long-term benefits over many years.	Can take a very long time to bear fruit.	No financial investment, simply one in political capital to implement a new policy/ordinance.
Broadband Currency	An effective way to entice private sector investment by reducing deployment costs for ISPs entering the market.	Requires the expenditure of funds. While effective, and quicker than a pure policy approach, it is not a quick fix either.	Some financial investment is needed to implement this approach as it requires the construction of physical infrastructure.
Combined Ordinance and/or Policy with Broadband Currency	This approach has the combined strengths of both above accessory models, with both a long-term outlook and more immediate benefits.	Requires the expenditure of funds. While effective, and quicker than a pure policy approach, it is not a quick fix either.	Some financial investment is needed to implement this approach as it requires the construction of physical infrastructure.

5.1.4 Business Model Funding

There are multiple avenues available to local governments when it comes to funding a network deployment or contributing to a P3 for improved broadband. As outlined in the previous section, the simplest and lowest risk option is to purely enact policies and put ordinances in place that reduce the deployment costs for broadband infrastructure while also protecting the integrity of the community's ROW. While cost-effective, this approach will not provide Brooks County with much control over how long it will take for improved broadband to be realized by the end-user.

Should the political will exist to promote a greater degree of control by pursuing a publicly owned, privately serviced or hybrid ownership model, there are a handful of potential funding avenues to evaluate. Before deciding on this front, however, best practices indicate that robust financial modeling

should be performed in conjunction with an engineering analysis to determine accurate project cost both in terms of Capex (capital expenditures), the funds spent to acquire or upgrade long-term assets like infrastructure and equipment and Opex (operating expenses), the ongoing costs required for the day-to-day operation and maintenance of a business or infrastructure, such as broadband networks. Once financial feasibility and payback periods are confirmed, the following avenues should be explored:

Federal and State Grants

Programs like the Broadband Equity Access and Deployment (BEAD) within the Infrastructure Investment and Jobs Act, the American Rescue Plan Act (ARPA), Community Development Block Grant (CDBG), and the USDA's Reconnect Loan and Grant Program provide significant funding for broadband projects. However, time is of the essence with this approach as ARPA funds must be spent by Dec. 31st, 2026, and a BEAD strategy must be pursued in collaboration with a private partner who would apply for the funds with the county's support. More information on funding opportunities is included in Section 7.

Tax Increment Financing

Tax Increment Financing (TIF) is a funding mechanism that municipalities use to stimulate economic development and infrastructure projects, including those for municipal broadband. TIFs work by designating a specific area, known as a Tax Increment District, where the expected increase in property tax revenues from future development is used to finance current improvements. Essentially, the projected growth in tax revenue serves as collateral to fund the upfront costs of the project. This model is particularly useful for projects that might not attract immediate private investment but are expected to generate significant economic benefits over time.

When applied to municipal broadband projects, TIFs can help cover the substantial initial costs of building the necessary infrastructure. By leveraging future tax increments, cities can invest in broadband networks that provide high-speed internet access to underserved areas, while fostering digital inclusion and economic growth. This approach not only enhances connectivity but also attracts businesses and residents, ultimately increasing the tax base and promoting the long-term sustainability of the investment.

General Obligation Bonds and Revenue Bonds

General obligation bonds (GO bonds) are another common method for municipalities to fund various public projects, including those for municipal broadband. These bonds are backed by the full faith and credit of the issuing municipality, meaning they are secured by the municipality's taxing power. When municipality issues GO bonds, it pledges to repay the bondholders through general taxation, which can include property taxes, sales taxes, or other forms of municipal revenue. This makes GO bonds a relatively secure investment, as the repayment is not dependent on the success of the project itself. For municipal broadband, GO bonds can provide the necessary capital to build out the infrastructure, supporting that the community has access to high-speed internet.

On the other hand, revenue bonds are repaid through the revenues generated by the projects they finance. In the case of municipal broadband, this means that the bonds would be repaid using the income generated from the broadband services provided to residents and businesses. This type of bond is considered riskier than GO bonds because the repayment depends on the project's ability to generate sufficient revenue. However, revenue bonds can be an attractive option for funding municipal broadband as they do not rely on general taxation. They can also be structured to align with the expected cash flows from the broadband services, or in the case of P3 networks, by the lease fees paid by the private partner to use the infrastructure (see below). By using revenue bonds, municipalities can finance broadband projects

without increasing the tax burden on their residents, making it a politically feasible option for expanding digital infrastructure.

Leasing Infrastructure

Leasing agreements can be used to finance the procurement and construction of broadband infrastructure. This approach is not a stand-alone means of funding a network deployment, but rather the revenue backstop used to prove financial viability when pursuing loans or revenue bonds. Leasing rates should consider funding necessary to supplement the construction of the network but should not be high enough to deter providers from entering agreements.

5.1.5 Public-Private Partnerships (P3)

Four of the five partnership models described at a high level within section 5.1.2 are distinct approaches to partnerships, while the fifth is essentially fully passive and leaves broadband improvement completely in the hands of the private sector. This section provides more details on these four partnership models.

Open Access

Traditionally, broadband networks are operated by a single entity, and customers connected to that network are limited to receiving service only from that single entity. In this paradigm, which is by far the most common in the US, customers that have access to more than one wireline service provider live in homes which are passed by more than one physical network, each owned and operated by different companies. Since broadband network infrastructure is expensive to build, this generally means that once one or two providers are serving a given community, it is difficult for new entrants to justify overbuilding that community, which leads to complacent providers and stagnation of service improvements.

By contrast, in the Open Access model, the wireline network infrastructure is owned and maintained by a neutral, non-ISP, who allows multiple ISPs to utilize the network to deliver service via software defined networking. This paradigm benefits the customers the most but also allows ISPs to expand their service footprints without the risky and expensive investment of capital to build their own networks. Additionally, this model is of particular interest in Texas, where municipalities and counties are prohibited by law from offering broadband service as a utility. The objection to local government beginning to compete with established private sector enterprises by selling broadband service to residents is understandable. However, in building and operating open access infrastructure, the local government is not competing with private enterprise but rather enabling private sector enterprises to compete with one another in such a way as to benefit the community's residents, while also inhibiting de facto monopolies.

Open access networks are typically built by either municipalities or infrastructure companies who solicit ISPs to lease space on their networks. Typically, the goal is to facilitate competition by lowering the costs of deployment, while paying for the infrastructure through leases to the participating providers.

Private Ownership with Public Equity

Costs for deployment can be prohibitive for ISPs. As for-profit entities, it is logical for them to put their limited expansion capital into markets where the ratio of potential customers to dollars spent is more favorable to them. Unfortunately, this tends to mean that less densely populated areas rarely see investment from either incumbent providers or new competitors to the marketplace. To serve these communities, it is therefore common for ISPs to seek subsidies to lower their costs. Sometimes this can be done through grants, but other times ISPs seek public funding. ISPs often need a faster ROI than communities do.

When considering public investment in networks, it is important to refer to the considerations in the Ownership and Operations model section above. If public money is being used, there should be some form of commensurate ownership or return.

This should also be a consideration when public assets are being considered (ROW, land, ring fiber, conduit, etc.). If the public is contributing any asset related to the infrastructure, ownership or ROI should be discussed and incorporated.

Publicly Owned with Private Provider Lease

A return for any municipal assets being used can be done through leases and, depending on the costs and terms, can be cheaper than the costs ISPs would have to construct their own infrastructure. Public agencies often focus on a longer ROI than private companies, so this model can be successful for the municipality and the ISP.

Revenue Sharing

It is common in the broadband industry for ISPs to offer revenue sharing. Revenue sharing can be based on ROW use, municipal-owned infrastructure used (if not in a lease agreement), etc. This is most often based on a percentage of their revenue after their initial deployment costs. The values can vary greatly, so it is important to understand the ISP's formula clearly. Depending on the projections, this has sometimes been a good source of ongoing revenue.

5.1.6 Request for Proposal Preparation

An RFEI is a procurement document used to gather information from potential vendors or partners about their interest and capabilities in a specific project or service. It helps organizations assess market availability and vendor capabilities before proceeding with formal procurement processes.

To review the RFEI template, please refer to P3 - Request for Expression of Interest (RFEI) in the Appendix

5.2 Brooks County Prospective Partnership Opportunities

To assist the county in navigating potential partners and what they could offer, our project team obtained FCC data on the companies already operating in the area and compiled a list of potential entrants to the market who serve similar and proximal communities to those in Brooks County. We then made outreach efforts to gauge their interest in entering into a P3 with the county. What follows is a summary of those efforts, including contact information for the various entities we spoke with or attempted to reach.

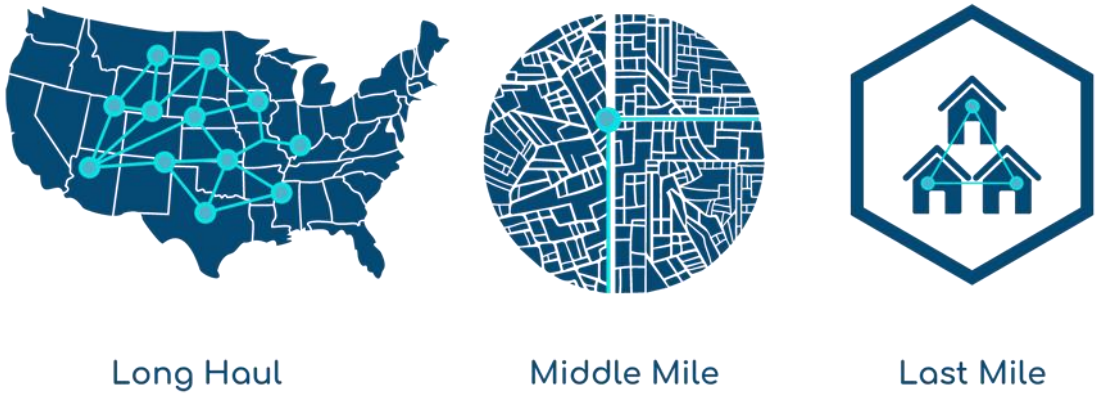
5.2.1 Potential Partners in Brooks County

It is helpful to divide potential P3 partners into two broad categories: last-mile providers and middle-mile/long-haul service providers. In some cases, there is overlap between the two, but generally speaking, this is an effective approach to capture all relevant providers impacting and capable of impacting the project area.

A helpful analogy to understand the difference between these two categories, and to appreciate their interdependence upon one another, is that of the circulatory system in the human body. A long-haul and/or middle-mile network is analogous to the arteries that bring oxygenated blood from the lungs to the arms and legs, while the last-mile network is the capillaries that deliver oxygen to the individual cells of the body.

In a broadband network, the last-mile portion is necessary to reach the households and businesses that need the service, while the middle and long-haul portion is necessary to connect the last-mile portion to the rest of the internet. This connection is done via an internet exchange, also known as a point of presence or carrier hotel, which are almost always situated in large cities. The graphic below illustrates these three network layers: long-haul to interconnect cities, middle-mile to extend that connectivity to communities, and last-mile to connect to each home.

Exhibit 26: Broadband Network Infrastructure Layers



From a partnership perspective, a community jurisdiction with any sort of long-haul provider agreement can reduce the costs for a last-mile provider to deliver service to that community. In addition, the presence of a last-mile provider can help a middle-mile provider justify their investment to extend their network into underserved areas of these communities.

Based on provided ISP data, it appears that “broadband” is available to most BSLs in Brooks County in some form of technology infrastructure. However, according to other sources of data, only 90.9 percent of households have an internet subscription, indicating an adoption challenge that is likely economic in nature (41.7 percent poverty rate). Also, while essentially the entire county could be considered "served," the majority of this coverage is from fiber, licensed and unlicensed fixed wireless, and cable. While fiber is referred to as the gold standard of technology to the home, for those who use fixed wireless, it is known to suffer from frequent service outages and fluctuations in available download and upload speeds, making it an unreliable service delivery medium when compared with fiber.

Below are tables with middle-mile/long-haul service providers and last-mile providers with contact information for their representatives. Included is a table which shows which ISPs have a service footprint in Brooks County, what technology they use to deliver their service, and how many BSLs their networks reach in the county. Note that if a single provider offers service via more than one delivery technology, each of those technologies are given their own row in the table. We have tried to reach out to these service providers, with mixed success, and the county should also reach out to them for future discussions as plans for expansion and service are subject to change. Notably, we include not only all ISPs that currently operate either wireline or fixed wireless networks in the county, but also others with footprints near Hudspeth County or that are potentially interested in expanding into the county.

Exhibit 27: Middle Mile Providers with Operations in, or Near, Brooks County

Provider	Contact	Email
AT&T	Mario Barragan	mario.barragan@att.com
Crown Castle	Mandy Derr	Amandus.Derr@crowncastle.com
FiberLight	Matt Leach	matt.leach@fiberlight.com
Hilliary Communication	N/A	reg.data@hilliary.com
Sprint	Patrick Fucik	partick.r.fucik@sprint.com
VTX1 Communications / Valley Telephone Cooperative	Orlando Quintanilla	orlando.quintanilla@vtx1.net
Texas Windstream, Inc.	Mike Hunsucker	michael.hunsucker@windstream.com

Exhibit 28: Last Mile Providers with Operations in Brooks County

Provider	Contact	Email or Phone Number
AT&T	Mario Barragan	mario.barragan@att.com
Foremost Telecommunications	Lawrence Halcomb	halcomb@foremosttelecom.com
Gtek Communications	Jeremy M	jeremym@gtekcommunications.com
Riviera Telephone Company	Sonia Galvan	sonia.galvan@rivnet.com
SmartCom Telephone	Alan Yoder	ayoder@smartcomtelephone.com
Spectrum / Charter	Sandra Magaña Cuellar	sandra.cuellar@charter.com
T-Mobile	N/A	877-347-2127
Verizon	Ryan Beck	ryan.beck@verizonwireless.com
VTX1 Communications / Valley Telephone Cooperative	Orlando Quintanilla	orlando.quintanilla@vtx1.net

Exhibit 29: Last Mile Offerings Within Brooks County

Provider	Service Delivery Technology	# of BSLS in Footprint
VTX1 Communications	Unlicensed Fixed Wireless	2,845
VTX1 Communications	Fiber	2,544
T-Mobile	Licensed Fixed Wireless	2,466
Spectrum	Cable	2,420
Verizon	Licensed Fixed Wireless	2,202
VTX1 Communications	Licensed Fixed Wireless	1,814
Gtek Communications	Unlicensed Fixed Wireless	701

Provider	Service Delivery Technology	# of BSLS in Footprint
Valley Telephone Cooperative	Licensed Fixed Wireless	318
Valley Telephone Cooperative	Fiber	268
Valley Telephone Cooperative	Copper	148
AT&T	Licensed Fixed Wireless	140
Spectrum	Fiber	105
Gtek Communications	Licensed Fixed Wireless	53
Valley Telephone Cooperative	Unlicensed Fixed Wireless	17
Riviera Telephone Company	Copper	2

The following maps indicate the download rate from the FCC within Brooks County as well as which ISP provides services to each location within the county. All ISPs available in the region have individual maps available within the appendix.

This information provides valuable insights into the current infrastructure and potential areas for improvement to ensure better connectivity for all Brooks County residents. By analyzing these maps, stakeholders can make informed decisions to address current service gaps and promote a more connected community.

Exhibit 30: FCC Download Rate Within Brooks County

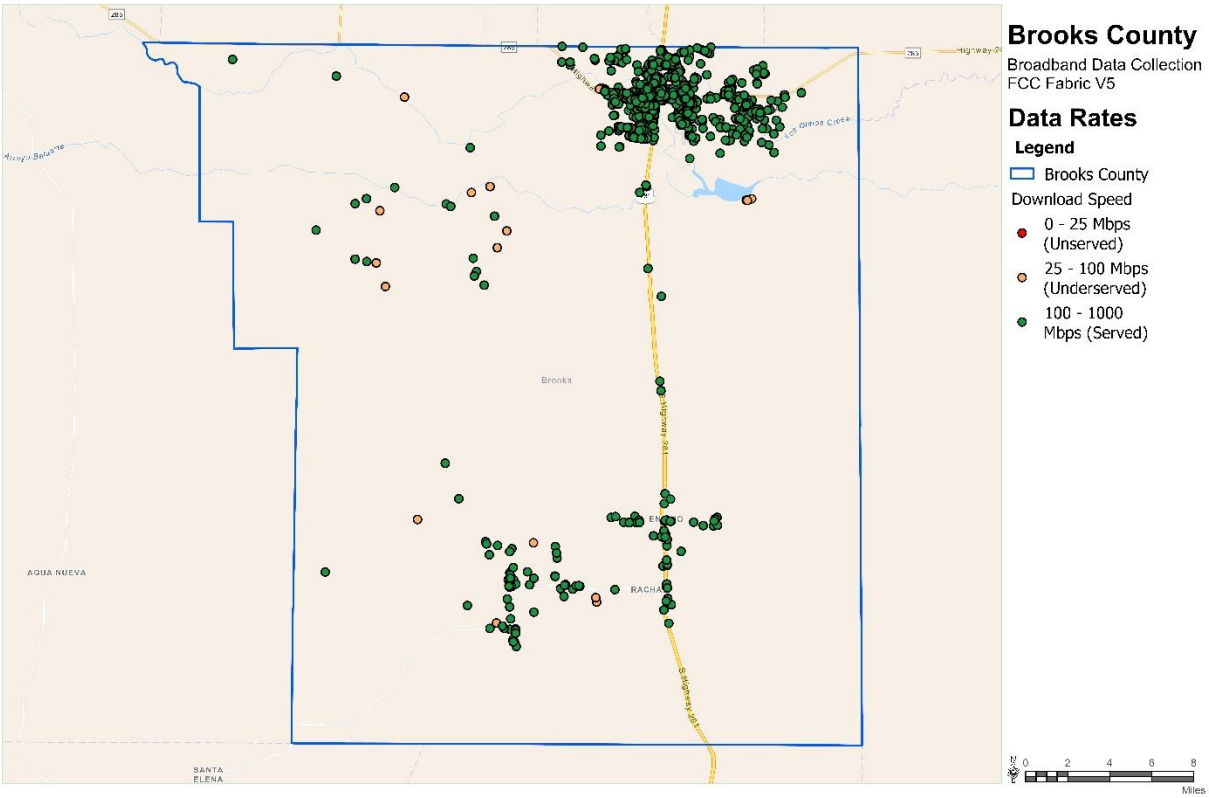
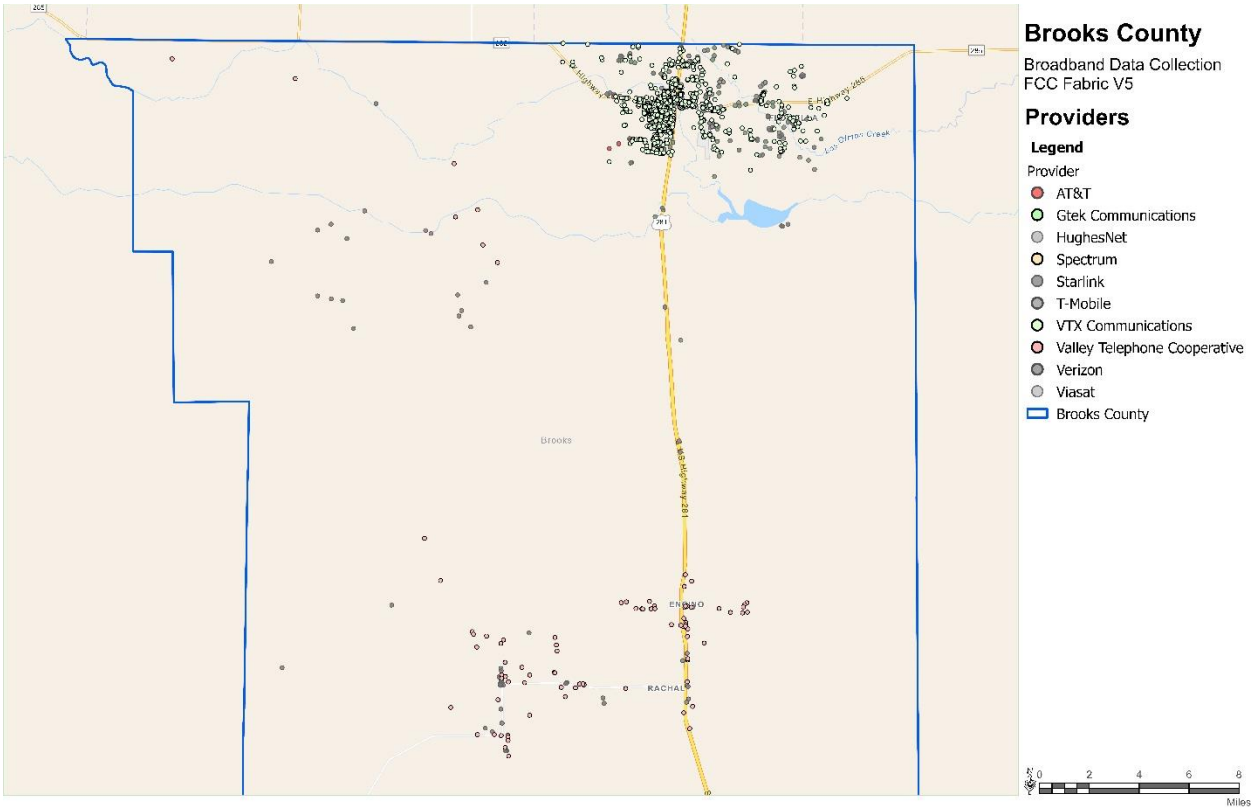


Exhibit 31: ISP's Providing Services to Each Location within Brooks County



Meetings were held with several middle-mile and last-mile ISPs throughout the course of this project. Willingness to respond to questions varied greatly among each ISP as confidential information could not be shared with the team. For those ISPs who could provide insight into the questions, the team learned valuable information for the county. For instance, FiberLight has not contractually been involved in a P3 agreement, but they have been conducting similar projects with schools in Amarillo, Texas. In addition, they are willing to help foster a partnership with one of their last-mile providers as they are not in the business of doing residential last-mile themselves. Similarly, Windstream had been involved in three separate P3 projects for rural regions. While their focus is on staying within their footprint, Windstream would like to be the one to provide last-mile services. In the case of VTX1/TISD, they have a middle-mile facility within the county. While they do not have designated middle-mile projects at this time due to their well-developed network, they are open to expanding capacity as needed. For Smartcom, they lease fiber from other carriers to augment their network, but they rarely lease out dark fiber as there isn't a demand for this service. They also strategize in building fiber in areas where there's little to no competition, allowing them to serve communities with limited-service options.

Also, of note for Brooks County is Nextlink, an ISP which does not have a service footprint according to Form 477 data, but is looking at growing their network, making them potential P3 candidates despite an absence of current footprint. The county should try to keep apprised of Nextlink's network development in the area should services expand to or upgrade for Brooks residents. The person of contact for Nextlink in Brooks County is:

- Claude Aiken at caiken@team.nxlink.com

Additional information has been summarized in the table below for ISPs with middle-mile networks in Brooks County (Exhibit 32).

Exhibit 32: ISP Network Summaries within Brooks County

Questions Asked	FiberLight	VTX1 / Valley Telephone Cooperative
Do you have middle-mile in Brooks County?	Yes.	Yes.
Is your middle-mile conduit, fiber or both or another technology (fixed wireless, etc.)?	Fiber.	Fiber.
If fiber, is it aerial or buried?	Most likely buried.	It is 100% buried.
Is there any redundancy in the network?	Yes, as they have redundant rings. All its core networks are built redundant.	Their network is built with redundant paths, virtual routers, and diverse upstream providers to maintain resiliency.
Are you constructing new middle-mile in or near Brooks County?	They have plans for expanding in the Starr County area.	No.
Do you provide enterprise, school, or government services?	They provide services to all three entities.	They provide services to all three entities.
Are you involved in any public-private partnerships for rural or underserved area expansion?	Not contractually in a P3, but they are involved in a regional ESC in Amarillo, Texas.	Yes – with Cameron County, Hidalgo County, and Karnes County.
Are there volume-based discounts for larger or long-term agreements?	Yes, but the financials of the project must be assessed.	Yes, but they need to evaluate discounts based on the opportunity.
Are you open to partnership for last-mile (if not able to supply last-mile yourself)?	Yes, they are always open to it if it makes sense. They only provide last-mile to their enterprises and school districts. They do not do residential units and usually not small businesses.	Yes. Requirements include end-to-end optical connections for fiber-based solutions and standardized customer premise equipment to ensure service consistency.

Should the county wish to pursue a P3 agreement with any of the ISPs listed below, the county will need to:

- Utilize the information in this report to have a clear understanding of the unserved and underserved BSLs that are in relatively close proximity to the ISP.
- Talk with the ISP contact listed above.
- Discuss if the ISP is interested in extending their network to serve the BSLs.
- Determine what the ISP needs to extend their network (grant application support letters, assistance in permitting, etc.) to serve the identified BSLs.
- Based on the needs of the ISP, evaluate if the ISP request leading to Brooks County requires the county to have some level of ownership or control in the network extension. For example, if the ISP requires additional funding (or use of county-owned conduit or use of extra Brooks County-owned fiber) from the county and the county is willing to provide that, Brooks County will likely want to have some ownership, control, or renumeration in the assets deployed in exchange for its investment.
- If Brooks County does provide any investment in the network extension, the county will want to negotiate and formalize an agreement with the ISP. (Please refer to the business model section of this report.) This could be in the form of a lease agreement (if the ISP is using county-owned conduit or spare fiber) or an ownership and revenue sharing agreement that is reviewed and approved by the county attorney. In these types of arrangements, it is important to also define how operations and maintenance will be accomplished and paid for.

If after completing all the steps above Brooks County still has questions on next steps, they should feel free to contact the Texas Broadband Development Office for assistance.

6 Workforce Development

This chapter presents both a quantitative and a qualitative analysis of broadband workforce conditions in Brooks County and a high-level overview of the framework of recommendations. The analysis and recommendations examine the county's labor force in the context of its regional planning area, identify the workforce development structures needed for broadband improvement and suggest next steps to close any gaps that are found.

6.1 Workforce Summary

Brooks County is extremely rural with fewer than 3,000 total jobs in the county, as of 2023. The county has experienced a loss in jobs over the last 10 years, with over 10 percent fewer jobs in 2023 than in 2013. As of 2023, the county only had 9 of the 43 broadband occupations representing 10 or more jobs in the county. These occupations were mostly in the construction, installation and support category. Though not all follow the same declining pattern as the county overall, most of these occupations' employment trends are at or below state and national comparisons.

The county experiences high poverty rates and low educational attainment which become barriers to recruiting a future broadband workforce. While broadband jobs in the region often require little to no postsecondary education, they do require extensive training and experience. Keeping pace with the broadband workforce demands by growing awareness for broadband related occupations and developing relevant training programs is critical to ensure successful broadband deployment as well as quality career opportunities for residents.

Brooks County has several regional assets it can leverage to build its future broadband workforce, such as the Coastal Bend Council of Governments (COG), Workforce Solutions Coastal Bend, Brooks County ISD, Del Mar College and Coastal Bend College. Brooks County can assist the ISD in creating relevant career and technical education (CTE) programs, like electrical programs, and connect students to broadband career pathways. The county can also connect ISPs, who historically have not engaged with the community, to opportunities to collaborate with higher education institutions to develop curriculum to meet their specific workforce demands. Employers can also broaden and diversify their workforce by building awareness among underserved populations and addressing common barriers to employment. This can be achieved through engaging with the nonprofit community involved in workforce development in the region, utilizing regional efforts like the Comprehensive Economic Development Strategy (CEDS) and Coastal Bend College's mobile learning lab, and developing digital navigator or ambassador programs.

Building Brooks County's broadband workforce means there must be active coordination between regional partners and leaders to understand the landscape and pool resources to meet workforce needs. Broadband service providers must be at the community table sharing their current and future workforce demands. Education partners from K-12, postsecondary and technical training programs must collaborate with employers to establish and scale training programs to provide the supply of workers to meet the future workforce demand. Regional partners and training providers should engage with industry associations to develop the most up-to-date curriculum and internship and apprenticeship programs. Furthermore, accessing the workforce funding needed to bolster these countywide initiatives will require collaboration among workforce, education, regional and employer partners.

6.2 Quantitative Analysis and Findings

The following section provides a quantitative analysis of the broadband workforce in Brooks County and surrounding region. In addition to definitions, it includes a baseline analysis of the identified broadband occupations (i.e., employment trends, earnings and demographics) and a pipeline analysis reflecting the demand for and supply of this workforce in the region.[7]

6.2.1 Definitions

This chapter relies on the following definitions that detail how the broadband workforce is defined, the federal standard used to classify occupations, and the geographies used for analysis.

6.2.1.1 Broadband Occupation Categories

The broadband workforce referenced throughout this report includes 43 occupations identified by the NTIA, Continuum Capital and the Texas Digital Opportunity Plan.[8] These occupations are grouped into three categories based on required education levels.[9] Exhibit 33 through Exhibit 35 show the national distribution of the workforce in each occupation by broadband occupation category and by educational level.

- **Construction, installation and support.** This segment of the broadband workforce is comprised of 18 occupations for which workers tend to need a high school diploma or less.
- **Skilled technicians.** This category encompasses 10 occupations for which workers tend to need more education than a high school diploma, but less than a bachelor's degree.
- **Project designers and specialists.** The 15 occupations grouped under this category tend to require a bachelor's degree or higher.

6.2.1.2 Standard Occupational Classification System

The analyzed occupations are classified in accordance with the Standard Occupational Classification (SOC) system that is used by federal agencies to classify workers into occupational categories for statistical purposes.[10]

6.2.1.3 Geographies Used

The baseline and pipeline analyses rely on broadband workforce data by county and region. When available, county-level trends are highlighted. In many cases, however, a regional scope is preferable to gain a better understanding of the workforce landscape and its challenges because workers may commute across county lines to job sites and employers.

The regions used in this series of reports are Texas COGs (or equivalents),[11] which are collections of neighboring counties that have a shared economic and political interest. COGs served as stakeholders in this project and will continue to be critical to the implementation of any workforce recommendations.

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[7] All employment, earnings, and demographic data are sourced from the US Bureau of Labor Statistics via Lightcast 2024.3—QCEW Employees, Non-QCEW Employees, and Self-Employed.

[8] *Internet for All: Workforce Planning Guide: Guidance for BEAD Program Eligible Entities*. US Department of Commerce, National Telecommunications and Information Administration (NTIA); *Broadband Market Workforce Needs: Research Summary*. 2024. Continuum Capital on behalf of the Fiber Broadband Association and Power and Communication Contractors Association; *Texas Digital Opportunity Plan, Appendix K: Building the Broadband Industry Workforce and Supporting Digital Skills for Texans*. 2024. Texas Broadband Development Office, Texas Comptroller of Public Accounts.

[9] Typical education required estimated by the US Department of Labor (DOL), Employment and Training Administration (ETA), Occupational Information Network (O*NET) version 29.

[10] Visit the US Bureau of Labor Statistics Standard Occupational Classification page to learn more.

[11] For more information on Texas COG regions, visit the Texas Association of Regional Councils.

Brooks County is part of the Coastal Bend COG, which also includes Aransas, Bee, Duval, Jim Wells, Kenedy, Kleberg, Live Oak, Nueces, San Patricio and Refugio counties.

Exhibit 33: Distribution of Broadband Occupations by Category and Typical Educational Requirements Nationally: Construction, Installation and Support Occupations

SOC Code	Occupation Name	High School (HS) or Less	More than HS, Less than 4-Year	Bachelor's or Higher
43-2021	Telephone Operators	97.8%	2.2%	0.0%
47-5022	Excavating and Loading Machine Operators, Surface Mining	94.3%	5.7%	0.0%
47-5023	Earth Drillers, Except Oil and Gas	87.8%	12.2%	0.0%
53-7062	Laborers and Material Movers, Hand	87.7%	8.3%	4.0%
47-2073	Construction Equipment Operators	83.1%	16.9%	0.0%
47-3013	Helpers — Electricians	81.5%	17.2%	1.3%
51-2098	Miscellaneous Assemblers and Fabricators	80.8%	13.9%	5.3%
53-3032	Heavy and Tractor-Trailer Truck Drivers	80.2%	19.8%	0.0%
51-4121	Welders, Cutters, Solderers, and Brazers	74.4%	24.7%	0.9%
49-9052	Telecommunications Line Installers and Repairers	72.7%	27.3%	0.0%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	69.8%	30.2%	0.0%
49-9051	Electrical Power-Line Installers and Repairers	68.4%	28.8%	2.8%
47-2061	Construction Laborers	67.4%	32.6%	0.0%
51-2028	Electrical, Electronic, and Electrotechnical Assemblers	66.4%	33.3%	0.3%
49-1011	First-Line Supervisors — Mechanics and Repairers	57.2%	33.2%	9.6%
47-1011	First-Line Supervisors — Construction and Extraction	57.2%	34.4%	8.4%
43-4051	Customer Service Representatives	54.8%	31.0%	14.2%
49-2022	Telecomm Equipment Installers and Repairers	43.1%	39.5%	17.4%

Exhibit 34: Distribution of Broadband Occupations by Category and Typical Educational Requirements Nationally: Skilled Technicians

SOC Code	Occupation Name	High School (HS) or Less	More than HS, Less than 4-Year	Bachelor's or Higher
39-1022	First-Line Supervisors — Personal Service Workers	18.0%	71.7%	10.4%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	32.3%	67.7%	0.0%
47-2111	Electricians	32.9%	65.8%	1.3%
17-3011	Architectural and Civil Drafters	15.6%	57.1%	27.3%
17-3019	Drafters, All Other	15.6%	57.1%	27.3%
17-3031	Surveying and Mapping Technicians	15.6%	57.1%	27.3%
49-2021	Radio Tower Equipment Installers and Repairers	34.9%	55.4%	9.8%
17-3012	Electrical and Electronics Drafters	6.1%	51.4%	42.5%
17-3029	Engineering Technicians, Except Drafters, All Other	37.0%	44.8%	18.2%
47-4011	Construction and Building Inspectors	38.7%	39.2%	22.1%

Exhibit 35: Distribution of Broadband Occupations by Category and Typical Educational Requirements Nationally: Project Designers and Specialists

SOC Code	Occupation Name	High School (HS) or Less	More than HS, Less than 4-Year	Bachelor's or Higher
17-2051	Civil Engineers	0.0%	3.0%	97.0%
19-5011	Occupational Health and Safety Specialists	0.0%	8.7%	91.3%
11-9021	Construction Managers	5.0%	5.0%	90.0%
17-2071	Electrical Engineers	0.0%	11.0%	89.0%
13-1051	Cost Estimators	4.6%	9.1%	86.4%
17-2072	Electronics Engineers, Except Computer	2.8%	12.0%	85.2%
13-1199	Business Operations Specialists, All Other	8.9%	17.6%	73.5%
15-1252	Software Developers	3.5%	29.8%	66.7%
15-1244	Network and Computer Systems Administrators	0.0%	37.5%	62.5%
13-1082	Project Management Specialists	17.5%	21.7%	60.7%
11-9179	Personal Service Managers, All Other	6.7%	33.0%	60.2%
19-5012	Occupational Health and Safety Technicians	9.5%	33.3%	57.1%
15-1241	Computer Network Architects	4.9%	41.2%	53.9%
15-1253	Software Quality Assurance Analysts and Testers	2.9%	44.1%	52.9%
41-3091	Sales Representatives, Miscellaneous Services	25.6%	29.9%	44.6%

6.2.2 Broadband Baseline Analysis

The baseline analysis examines historical, existing and projected employment by occupation across the broadband workforce categories. This approach establishes a foundational understanding of the labor market for each of the three broadband workforce categories to identify occupations that are well-supplied and growing and those that have few jobs or are declining. Additionally, occupational earning and demographics are reviewed in the context of regional and benchmark trends at the state and national levels.

6.2.2.1 Coastal Bend COG Region

This section looks at the baseline analysis for the three broadband workforce categories for the Coastal Bend COG region. Exhibit 36 in this section includes the total jobs in 2023, percentage change from 2013 and median earnings for each of the 43 occupations.

6.2.2.1.1 Construction, Installation and Support

Of the 18 occupations in this category, seven had fewer jobs in 2023 than in 2013. In contrast, the two telecommunication installation occupations are projected to grow by more than 50 percent over the next five years — the largest projected percentage change of any of the broadband-related occupations. These jobs also tend to be held by younger workers, both compared to the region overall and to the same occupations across the state and the US. These telecommunication roles and the electrical installer and repairer occupations all tend to earn more than the overall regional earnings levels across the board (i.e., median earning for each of these occupations is higher than the regional median earnings, a finding that holds true for most other percentiles, too). Lower management occupations (supervisors) in this category also have above-average earnings.

Exhibit 36: Baseline Analysis for Broadband Occupations in the Coastal Bend COG Region: Construction, Installation and Support Occupations

SOC Code	Occupation Name	Total Jobs 2023	Percent Change From 2013	Median Earnings
43-4051	Customer Service Representatives	4,255	55.6%	$36,254
47-2061	Construction Laborers	3,797	-4.8%	$36,022
53-3032	Heavy and Tractor-Trailer Truck Drivers	3,721	-19.2%	$48,176
47-1011	First-Line Supervisors — Construction and Extraction	2,607	17.7%	$70,969
53-7062	Laborers and Material Movers, Hand	2,435	2.7%	$34,139
47-2073	Construction Equipment Operators	1,644	12.7%	$45,796
51-4121	Welders, Cutters, Solderers, and Brazers	1,530	-12.7%	$54,135
49-1011	First-Line Supervisors — Mechanics and Repairers	1,388	34.3%	$75,313
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	800	-1.5%	$47,364
51-2098	Miscellaneous Assemblers and Fabricators	628	12.0%	$33,633
49-2022	Telecom Equipment Installers and Repairers	229	-65.0%	$55,540
49-9051	Electrical Power-Line Installers and Repairers	212	-6.2%	$65,731
49-9052	Telecommunications Line Installers and Repairers	180	-47.1%	$65,385

SOC Code	Occupation Name	Total Jobs 2023	Percent Change From 2013	Median Earnings
47-3013	Helpers — Electricians	148	-39.4%	$41,671
47-5022	Excavating and Loading Machine Operators, Surface Mining	135	-9.7%	$42,429
51-2028	Electrical, Electronic, and Electromechanical Assemblers	62	-37.2%	$35,019
47-5023	Earth Drillers, Except Oil and Gas	57	-40.6%	$47,014
43-2021	Telephone Operators	<10	—	—

6.2.2.1.2 Skilled Technicians

Half of the skilled technician occupations have grown over the last 10 years, while half have declined. Those that grew tend to pay modestly well, slightly above the average regional levels for mid-lower earners, while those that declined tend to be smaller, higher-paid occupations.

Those occupations that experienced growth included: electricians, mobile heavy equipment mechanics, except engines, construction and building inspectors, first-line supervisors of personal service workers and architectural and civil drafters. while those occupations experiencing decline included: engineering technicians, except drafters, all other, surveying and mapping technicians, electrical and electronics drafters, drafters, all other and radio tower equipment installers and repairers.

Exhibit 37: Baseline Analysis for Broadband Occupations in the Coastal Bend COG Region: Skilled Technicians

SOC Code	Occupation Name	Total Jobs 2023	Percent Change From 2013	Median Earnings
47-2111	Electricians	2,639	96.9%	$56,555
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	604	15.7%	$55,871
47-4011	Construction and Building Inspectors	327	>100.0%	$54,475
17-3011	Architectural and Civil Drafters	212	16.8%	$58,243
39-1022	First-Line Supervisors — Personal Service Workers	206	51.1%	$38,112
17-3029	Engineering Technicians, Except Drafters, All Other	186	-30.1%	$76,603
17-3031	Surveying and Mapping Technicians	127	-12.0%	$47,519
17-3019	Drafters, All Other	48	-51.7%	$73,433
17-3012	Electrical and Electronics Drafters	47	-40.8%	$67,742
49-2021	Radio Tower Equipment Installers and Repairers	44	-37.4%	$36,856

6.2.2.1.3 Project Designers and Specialists

The trends for project designer and specialist occupations are a mixture of high-growth, stagnant trends and decline. Some of the strongest growth has occurred in business operations (i.e., business operations specialists and project management specialists) and software occupations (i.e., software developers and software quality assurance analysts/testers), though there were other software occupations that saw decline (i.e., network and computer systems administrators and computer network architects). Consistent with other regions, these occupations tend to pay well above the regional benchmarks.

Exhibit 38: Baseline Analysis for Broadband Occupations in the Coastal Bend COG Region: Project Designers and Specialists

SOC Code	Occupation Name	Total Jobs 2023	Percent Change From 2013	Median Earnings
13-1082	Project Management Specialists	1,728	>100.0%	$93,790
11-9021	Construction Managers	1,561	55.4%	$84,272
41-3091	Sales Representatives, Miscellaneous Services	1,436	-5.4%	$52,568
13-1199	Business Operations Specialists, All Other	1,211	52.3%	$73,553
17-2051	Civil Engineers	702	-26.0%	$85,028
15-1252	Software Developers	556	>100.0%	$116,282
19-5011	Occupational Health and Safety Specialists	432	32.4%	$75,634
15-1244	Network and Computer Systems Administrators	373	-4.5%	$80,829
13-1051	Cost Estimators	355	-7.9%	$74,764
17-2071	Electrical Engineers	217	63.3%	$105,928
15-1253	Software Quality Assurance Analysts and Testers	202	>100.0%	$124,328
19-5012	Occupational Health and Safety Technicians	89	-0.5%	$51,527
17-2072	Electronics Engineers, Except Computer	87	-1.2%	$112,625
15-1241	Computer Network Architects	66	-4.2%	$120,432
11-9179	Personal Service Managers, All Other	64	>100.0%	$38,132

6.2.2.2 Brooks County

Brooks is a rural county with fewer than 3,000 total jobs in the county, as of 2023, which means the county had over ten percent fewer jobs in 2023 than in 2013.

As shown in Exhibit 39, Exhibit 40, and Exhibit 41, only 9 broadband workforce occupations had at least 10 jobs in the count in 2023. These occupations were mostly in the construction, installation and support category. Though not all follow the same declining pattern as the county overall, most of these occupations' employment trends are at or below state and national comparisons.

Exhibit 39: Brooks County Broadband Workforce Occupations with at least 10 jobs in 2023: Construction, Installation and Support Occupations

SOC Code	Occupation Name	Total Jobs 2023	Percent change from 2013	Median Earnings
53-3032	Heavy and Tractor-Trailer Truck Drivers	32	-42.1%	$43,097
47-2061	Construction Laborers	23	-4.3%	$31,920
47-1011	First-Line Supervisors — Construction and Extraction	18	-10.0%	$56,704
53-7062	Laborers and Material Movers, Hand	17	3.5%	$30,646
43-4051	Customer Service Representatives	17	28.7%	$32,614
47-2073	Construction Equipment Operators	14	15.8%	$41,866
49-1011	First-Line Supervisors — Mechanics and Repairers	11	18.5%	$69,018

Exhibit 40: Brooks County Broadband Workforce Occupations with at least 10 jobs in 2023: Skilled Technicians

SOC Code	Occupation Name	Total Jobs 2023	Percent change from 2013	Median Earnings
N/A				

Exhibit 41: Brooks County Broadband Workforce Occupations with at least 10 jobs in 2023: Project Designers and Specialists

SOC Code	Occupation Name	Total Jobs 2023	Percent change from 2013	Median Earnings
13-1199	Business Operations Specialists, All Other	27	>100.0%	$67,492
11-9021	Construction Managers	11	67.1%	$64,294

6.2.3 Broadband Pipeline Analysis

This section analyzes the demand and supply of the broadband pipeline based on the 43 defined broadband occupations.

6.2.3.1 Demand Alignment

Demand for the broadband workforce is estimated by reviewing regional job postings for occupations within each category over a five-year period. Exhibits in this section reflect the 10 occupations with the highest number of job postings. For the Skilled technician group, which is comprised of 10 occupations in total, the top 5 occupations are shown. To exclude demand from industry sectors not related to broadband deployment and maintenance, these job postings are from employers that fall into the broad construction, utilities and information sectors.[12]

[12] All job postings demand data are sourced from Lightcast 2024.3—QCEW Employees, Non-QCEW Employees, and Self-Employed.

6.2.3.1.1 Construction, Installation and Support

The 11 most in-demand occupations in the construction, installation and support category over the last five years accounted for 93 percent of the 2,613 job postings in this category in the region. Most of these occupations have turnover rates above the regional monthly average (i.e., 5.7 percent), meaning that employers may frequently post these jobs to replace departing workers. However, four occupations are at or below the average regional turnover, including mechanic and repair supervisors and the three telecommunication and electrical installer and repairer occupations.

More than 90 percent of job postings for construction, installation and support that listed education requirements requested only a high school diploma or GED education, which is consistent with the expected required education levels that define this category.

35 percent of these job postings come from eight companies in the region, including commercial, industrial, and infrastructure construction and engineering companies, such as Kiewit, Bechtel, MasTec, and DComm, and Dish, a large telecommunication provider.

Construction, power tool operations, machinery, and heavy equipment are some of the most-requested specialized skills in this category. Journeyman lineman and OSHA certifications were also frequently requested.

Exhibit 42: In-Demand Construction, Installation and Support Occupations in the Coastal Bend COG Region

SOC Code	Occupation Name	Job Postings	Percent of Total	Turnover Rate
47-2061	Construction Laborers	384	14.7%	5.9%
53-7062	Laborers and Material Movers, Hand	286	10.9%	8.1%
47-1011	First-Line Supervisors — Construction and Extraction	282	10.8%	6.3%
47-2073	Construction Equipment Operators	273	10.4%	7.1%
43-4051	Customer Service Representatives	218	8.3%	7.2%
53-3032	Heavy and Tractor-Trailer Truck Drivers	211	8.1%	5.8%
49-9051	Electrical Power-Line Installers and Repairers	203	7.8%	3.8%
49-1011	First-Line Supervisors — Mechanics and Repairers	194	7.4%	4.4%
51-4121	Welders, Cutters, Solderers, and Brazers	141	5.4%	6.8%
49-9052	Telecommunications Line Installers and Repairers	132	5.1%	5.7%

6.2.3.1.2 Skilled Technicians

Electricians were the most in-demand occupation in this category by far, accounting for more than 57 percent of the 608 skilled technician job postings over the last five years. Electricians were followed by mobile heavy equipment mechanics, construction and building inspectors, and engineering technicians, which collectively accounted for 90 percent of all job postings in the category. Except for electricians, these occupations have average or below-average turnover rates, indicating that the workers in these jobs tended to stay with their employer for longer than the average job. Electricians in this region have an unusually high turnover rate (i.e., 6.9 percent) compared to electricians at state (i.e., 4.9 percent) and

national (i.e., 4.6) levels. This might be because of a unique hiring cycle in the coastal region due to the storm season, but this is not reflected in other occupations.

Only about 60 percent of skilled technician job postings listed an education requirement, and those that did tended to only request a high school diploma or General Educational Development (GED). However, nearly 75 percent of occupations that listed experience requested between 2 and 6 years of relevant work experience. Considering that most of the job postings were for electricians — an occupation that trains through apprenticeships instead of traditional education paths — and the relatively high experience requirements, it is likely that these skilled technician occupations require more training than the construction, installation, and support category, though that training may not result in traditional education credentials.

Electrical wiring skills were requested in more than 30 percent of skilled technician job postings. Power tool operation, blueprinting, network switches and other electrical skills, including equipment, circuit breakers, conduits, systems, and codes and equipment were among the most in-demand specialized skills for skilled technician occupations, along with journeyman electrician, OSHA, and National Center for Construction Education and Research certifications.

Exhibit 43: In-Demand Skilled Technician Occupations in the Coastal Bend COG Region

SOC Code	Occupation Name	Job Postings	Percent of Total	Turnover Rate
47-2111	Electricians	351	57.7%	6.9%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	92	15.1%	4.8%
47-4011	Construction and Building Inspectors	70	11.5%	5.8%
17-3029	Engineering Technicians, Except Drafters, All Other	36	5.9%	4.0%
49-2021	Radio Tower Equipment Installers and Repairers	22	3.6%	5.9%

6.2.3.1.3 Project Designers and Specialists

The top five most in-demand occupations account for more than 75 percent of the 1,847 project designer and specialist job postings. Four of five are occupations more aligned with construction management and engineering services (i.e., construction managers, civil engineers, project management specialists and cost estimators). While there was some demand for computer service occupations (i.e., software developers, network and computer systems administrators), these accounted for far fewer of the job posting demand over the five-year period (i.e., less than 8 percent). Most occupations in this category have average or below-average turnover rates, though there are a few exceptions (i.e., sales representatives., cost estimators and occupational health and safety specialists).

About 60 percent of project designer and specialist job postings that listed education requirements requested a bachelor's degree or higher, and about the same percentage asked for at least four years of relevant work experience among those that listed experience requirements. These requests are consistent with the high education credentials that are typically expected of these occupations.

The most in-demand specialized skills among project designers and specialist job postings includes project management, subcontracting, construction management, and project scheduling — all indicative of the concentration in construction and engineering management roles in this category.

Exhibit 44: In-Demand Project Designers and Specialists Occupations in the Coastal Bend COG Region

SOC Code	Occupation Name	Job Postings	Percent of Total	Turnover Rate
11-9021	Construction Managers	523	28.3%	3.8%
17-2051	Civil Engineers	303	16.4%	3.5%
13-1082	Project Management Specialists	247	13.4%	5.0%
41-3091	Sales Representatives, Miscellaneous Services	203	11.0%	6.0%
13-1051	Cost Estimators	124	6.7%	7.7%
19-5012	Occupational Health and Safety Technicians	117	6.3%	5.3%
15-1252	Software Developers	109	5.9%	2.6%
19-5011	Occupational Health and Safety Specialists	91	4.9%	6.2%
17-2071	Electrical Engineers	57	3.1%	2.4%
15-1244	Network and Computer Systems Administrators	33	1.8%	2.8%

6.2.3.2 Supply Alignment

Regional supply of the broadband workforce is measured by a combination of accredited program completions, active apprenticeships, and available high school career and technical education programs. Though the relationship between educational pathways and occupations is not one-to-one, the reviewed programs give a sense of the supply of workers with credentials and skills relevant to the broadband workforce. Occupations with a limited or declining supply of talent in the region are especially important to consider in preparation for the needs of future broadband development.[13]

6.2.3.2.1 Construction, Installation and Support

There has been a consistent talent supply of welders in the region since 2013. Del Mar College, Coastal Bend College, and the South Texas Vocational Technical Institute (STVT) campuses in the region all offer welding programs that collectively conferred more than 3,700 awards in 2023, though this is down from a peak of more than 9,600 in 2019. Additionally, there were 170 apprentice welders in 2023 and 12 ISDs that offered welding CTE programs.

The remaining construction, installation and support occupations have a much more limited talent pipeline in the region. While Del Mar College and Coastal Bend College both offer programs that could contribute the supply of construction trade supervisors (i.e., building and property maintenance and carpentry programs), there were only a few hundred completions annually over the last decade.

The situation is similar for the three key telecommunication and electrical installer and repairer occupations. There have been a few programs across Del Mar College, Texas A&M Kingsville, and Northeast Lakeview College, but completions are inconsistent and few. However, there were more than 140 active apprentices in these occupations in 2023, which helps contribute to regional supply.

[13] Accredited program completion data are sourced from the National Center for Education Statistics (NCES), Integrated Postsecondary Education Data System (IPEDS) via Lightcast 2024.3—QCEW Employees, Non-QCEW Employees, and Self-Employed. Data on apprenticeships are sourced from the US Department of Labor, Registered Apprenticeship Partners Information Database System (RAPIDS). Data on CTE programs are sourced from the Texas Education Agency (TEA).

There has also been a steady supply of talent (i.e., more than 1,700 in 2023) to mechanic and installer supervisory occupations over the last decade from HVAC, automotive mechanic technician and other related programs at Del Mar College, Coastal Bend College and STVT. These skills may contribute to the peripheral support of the broadband workforce but are unlikely to directly contribute to the talent supply.

6.2.3.2.2 Skilled Technicians

A collection of programs in the region have consistently conferred an average of 1,600 annual awards that may help fuel the talent supply of engineering technicians, mostly from Del Mar College and two Texas A&M campuses (i.e., Corpus Christi and Kingsville). However, not all the completions from this variety of programs may be applicable for the types of engineering technicians needed for broadband deployment. Considering only the programs most likely to be relevant (i.e., industrial, architecture engineering, mechanical, electrical and electronic communication and other engineering technician programs), the average regional number of annual completions drops to about 800.

The number of active electrician apprentices in the region has stayed a consistent 250-300 since 2013. This is a good indicator that electricians are finding apprenticeships within the region to develop their skills and are staying in the region. Increasing the number of electricians would help to prevent shortages in broadband deployment since they are in high demand across sectors.

There has also been a consistent number of completions in drafting-related programs that contribute to the supply of architectural and civil drafters, electrical and electronics drafters and other drafter occupations, but these are not in especially high demand based on the previous five years of job postings.

6.2.3.2.3 Project Designers and Specialists

The supply of construction managers may suffer from the same shortfalls as construction trade supervisors and building inspectors. However, completions in programs like Del Mar College's architectural engineering technician program, which had more than 270 completions in 2023, may also contribute to supply. This program also may contribute to skilled technician occupations, like engineering technicians.

There has been a consistent supply of civil engineers in the region since 2013 with more than 1,300 average annual completions, mostly from civil, architectural, and surveying engineering programs at Texas A&M Corpus Christi and Kingsville.

Other highly demanded business-related construction and project management occupations, like cost estimators and project management specialists, may be filled by the same types of programs that align with construction managers, engineers, or engineering technicians. While some of these programs have a consistent and robust supply in the region, like civil or mechanical engineering programs, the demand for those graduates will be split across many sectors other than broadband development. Targeted programs will help better align a supply stream to the in-demand broadband occupations.

There are a good number of occupational safety and health technician and specialist programs in the region at Texas A&M Corpus Christi, Kingsville and Del Mar College. These programs, including environmental science programs, confer about 1,000 awards annually, though the number of awards dipped to about 900 in 2023.

6.3 Qualitative Analysis

The qualitative analysis includes a collection of community workforce development assets found in the county and across the region. This section also includes findings from stakeholder engagement conducted with regional partners and broadband providers in the county.

6.3.1 Community Assets

While Brooks County's rural environment limits the immediate resources and assets available to the community, it is part of the larger Coastal Bend COG region, which has a number of assets that can be leveraged to implement strategies related to building the broadband workforce. Assets are grouped and listed in Exhibit 45. Regional planning groups, including the council of government and workforce development board were identified through online research. Postsecondary institutions and K-12 institutions were identified through online research, the Integrated Postsecondary Education Data System, and the Texas Education Agency. The alignment of training efforts between these institutions and industry employers is critical to building the broadband workforce pipeline in the county.

Exhibit 45: Regional and County Workforce Development Assets

Category	Assets
Regional Planning Groups	Coastal Bend Council of Governments, Workforce Solutions Coastal Bend
Postsecondary Institutions	Texas A&M University-Corpus Christi, Texas A&M University-Kingsville, Del Mar College, Northeast Lakeview College, Coastal Bend College, Southern Careers Institute-Corpus Christi, South Texas Vocational Technical Institute-Corpus Christi, Platt College-STVT-Corpus Christi, Miller-Motte College-STVT-Corpus Christi
K–12 Institutions	County school districts: Brooks County ISD

6.3.2 Stakeholder Engagement Findings

Stakeholder engagement conducted with regional partners and broadband providers in the county led to several takeaways that informed the recommendations in Section 3. Interviews were conducted with Office of Brooks County Judge Eric Ramos, Coastal Bend Council of Governments, SmartCom Telephone, and Valley Telephone Cooperative. Interviews addressed the following areas for the county and greater region: hiring needs, education and training, employment barriers and awareness.

6.3.2.1 Hiring Needs

Stakeholders were asked to share their hiring practices and to identify broadband jobs that are hardest to fill regionally.

- One ISP mentioned facing challenges filling roles for tower climbers, network engineers, fiber splicers and generally any positions requiring field work. This employer attributed this to the competitive market for these occupations and that projects in larger counties often are able to offer higher compensation.
- Employers shared that they typically recruit for roles using traditional job postings online through agencies like Indeed. They also shared they utilize partnerships with the Texas Workforce Commission to attract potential employees and interns. One company emphasized their preference to promote from within, allowing them to cross train staff to have installation and repair experience.
- ISPs mentioned often looking for contractors that have a local or regional presence and hire within those geographies.

6.3.2.2 Education and Training

Stakeholders shared their knowledge about education and training providers offering broadband career training courses or certificates regionally.

- Many of the interviewed ISPs did not have existing relationships with K-12 partners, postsecondary institutions, or training providers in the region. In fact, many were unaware of who the education and training providers were in the region. One employer attributed this to not needing to use regional training providers in the past to recruit and meet their workforce needs. But employers expressed interest in having conversations about how they can engage with more schools to build their future workforce pipelines.
- There is an interest to enhance non-traditional training activities such as internships, on-the-job-learning, and on-the-job-training.

6.3.2.3 Employment Barriers

Stakeholders discussed the most common barriers residents face when seeking employment.

- The primary challenge for connecting residents to broadband related jobs is the required level of educational attainment.
- The community faces extreme poverty and public health crises around diabetes and drug problems that all pose challenges to employment.
- The region has a population of individuals with felony records who find it difficult to find employment. Companies willing to hire and train this population have access to an excellent second-chance workforce.
- Employers often report to the regional workforce board that there is a need for employees with essential skills and work-readiness which are a barrier to employment entry and retention.
- Housing is an ongoing problem, as it is everywhere, making it hard for workers to find affordable places to live near job sites.
- Transportation is a big issue that impedes job seekers' ability to access career opportunities.
- Childcare remains an ongoing necessity, with a shortage of providers making it challenging for working parents to secure high-quality care.

6.3.2.4 Awareness

Stakeholders were asked to share suggestions on how to build awareness around broadband career opportunities across the county.

- Workforce Solutions Costal Bend has successfully promoted career awareness for other sectors that can also be utilized for the broadband sector. They deliver career exploration activities directly to students by utilizing virtual reality, career expos, internships, externships, active participation in ISD CTE programs, advisory councils, and parent engagements.
- Connecting employers with training providers and developing more training programs within the school district and among postsecondary partners would increase awareness of high-demand career opportunities in the broadband sector.
- Some employers mentioned partnering with the Texas Workforce Commission for career days to raise awareness of broadband career opportunities.
- One ISP mentioned they are offering digital literacy programs using video trainings, informational events and partnerships with housing authorities as a starting point to introduce residents to the possibilities available through broadband connectivity.
- Brooks County is challenged with high poverty and low educational attainment and therefore needs intensive outreach as it relates to digital inclusion and awareness around broadband careers. The COG is working on outreach grants for workforce in the region generally that could benefit Brooks as they seek to grow awareness for broadband opportunities.
- Workforce Solutions and Coastal Bend College offer mobile learning labs that could potentially be used to expand awareness in Brooks County.
- The judge reported existing partnerships across COGs with neighboring counties like Jim Hogg, Jim Wells, and Duval to discuss their regional digital and broadband needs.

Exhibit 46: Regional and County Workforce Development Assets

Topic Area	Recommendation
Education and Training Programs	Partner with local schools, community colleges, and technical institutions to create specialized training programs focusing on broadband-related skills, such as telecommunications installation, equipment repair, and network management. Offering certifications and hands-on training can prepare residents for these jobs.
Community Outreach and Career Fairs	Host broadband-specific career fairs and community workshops in partnership with local employers to introduce residents to opportunities in the broadband sector. Inviting companies to discuss the growth potential in this field can raise awareness and spark interest among local populations.
Apprenticeship and Internship Programs	Establish apprenticeship and internship programs with local companies. These programs allow individuals to gain real-world experience while learning valuable skills. By providing direct pathways into the industry, these programs can encourage more people to explore broadband careers.
Incentives for Workers and Employers	Offer relocation bonuses, housing assistance, or other incentives to attract skilled workers to the region. Additionally, companies could offer scholarships to individuals pursuing education or certifications related to broadband careers.
Local Government and Economic Development Initiatives	Leverage local governments and economic development organizations. These entities can play a critical role by creating initiatives supporting broadband sector workforce development, including tax incentives for businesses that provide training or hiring bonuses for skilled technicians.
Digital Literacy and Career Pathways	Promote digital literacy campaigns to help individuals understand the importance of broadband technology and the career opportunities it provides. By highlighting long-term career pathways, from entry-level technician roles to advanced engineering positions, more people may be motivated to explore this sector.
Partnerships with Broadband Providers	Work with telecommunications companies to provide equipment donations (i.e., networking gear, fiber optic tools) to local schools and training centers. These resources could be used in practical, hands-on training sessions, giving participants real-world experience.
Mobile Training Units or Remote Learning Options	Implement mobile training units or online learning platforms to offer training in remote areas. These platforms could provide technical education and certifications without requiring individuals to travel long distances, which can be a significant barrier in rural regions.
Local Success Stories	Share success stories of local individuals who have built careers in the broadband sector. This can include featuring case studies of people who have pursued telecommunications or technology roles and achieved career success. Hearing from people in their own community can make the opportunities more relatable and appealing to residents.

6.4 Strategic Recommendations

Recommendations for improving the broadband workforce in Brooks County center on five areas: collaboration, alignment, awareness, diversification, and funding.

6.4.1 Collaboration

Collaborate with ISPs to understand in-demand occupations, skills and training credentials in real time.

- Engage with ISPs regularly through an Employer Advisory Council with shared commitment to building and diversifying the broadband workforce, meeting industry demands, and driving learning and training opportunities.
- Identify what employers currently need and what they anticipate needing for workforce demand and understand their experience recruiting in the past in other service areas and how they plan to meet their workforce needs locally in the future. Give special attention to the field work related occupations that ISPs identified as the most difficult to fill in the county and region.
- Validate the data for workforce needs by occupation, skillsets, timing, and training requirements.
- Build strong collaborations regionally and locally between area ISPs and workforce development partners and training providers. Regional collaboration leads to coordination, rather than competition, with peer communities in the region ensuring all partners are working together to solve workforce challenges and provide training (working with COGs, workforce development boards, county judges, community colleges, school districts).
- Encourage education and training partners to reach out to ISPs who historically have not been engaged and offer them the opportunity to partner and customize training programs to fit their specific workforce needs.
- Engage the many nonprofit organizations involved in workforce development to collaborate with employers. This should include organizations like the Education to Employment Partnership and their Upskill Coastal Bend effort, the Ed Rachal Foundation, Falfurrias Economic Development Accelerator, and public sector partners like the county library and ISD.

6.4.2 Alignment

Align training curriculum between workforce development entities and in-demand skills that lead to industry-recognized credentials by employers.

- Ensure area school districts have access to county-level and regional broadband workforce data to inform the development of CTE programming.
    - Establish broadband related CTE programs, such as an electrical program within Brooks County ISD, and create a specific broadband career track for the most in-demand broadband occupations.
    - Recruit students from related local CTE programs, like welding, to consider careers in broadband.
    - Launch internship and pre-apprenticeship programs to prepare young individuals to enter and succeed in registered apprenticeship programs in the broadband field. Specifically focusing on electrical pre-apprenticeships for students since the region has such high demand for electricians.
    - Invite area ISPs to participate in local and regional training program courses to share more about their companies and offer students practical advice.
- Partner with post-secondary education providers to create technical and higher education programs of study that feed into broadband careers.

    - Develop a telecommunications component to existing skilled trades programming at Del Mar and Coastal Bend College, such as electrical and welding programs, in order to quickly train broadband professionals. Since many relevant training programs could apply to multiple sectors, it is important that targeted programs are developed with clear connections to in-demand broadband occupations and area employers.
    - Bring together employers and post-secondary training partners to develop construction related programs that can fill the existing dearth of such programs and quickly deploy a broadband workforce locally. Related occupations include construction trade supervisors, construction building inspectors, and telecommunication and electrical installer and repairers.
    - Create bridges between CTE, training providers, and higher education institution programs for stackable credentials.
    - Connect students from local and regional training programs with local and regional broadband providers to connect students to job placement opportunities in real time.
- Understand the local and regional landscape of industry-led certifications and the avenues for pursuing those private educational training program opportunities.
    - Partner with industry associations, like NTCA, to establish a process to evaluate progress and ensure that all local and regional broadband training programs have the flexibility to adapt to meet the current needs of the broadband sector by measuring 1) program completion/graduation, 2) credential attainment, 3) job placement, 4) wage level, and 5) job retention.
- Develop programming to target adult workers interested in upskilling, reskilling or advancing in the broadband profession.
    - Identify local, regional, and national partners who can help establish training and apprenticeship programs, including internet service providers, industry associations, technical and community colleges, and state and local workforce development agencies.
    - Ensure apprenticeship programs are part of a clearly articulated professional pipeline that allows for continued employment and growth.
    - Offer continuing education opportunities like professional development courses, workshops and webinars to meet the future changing skills the workforce will need and to promote stackable credentials and opportunities for employees to grow with existing employers.
- Incorporate soft skill training into curriculum to ensure job seekers are competitive for employment opportunities and advancement.

6.4.3 Awareness

Raise greater awareness and exposure to the quality career opportunities in the broadband industry.

- Launch public awareness campaigns that inform residents about the local career-oriented job opportunities linked to broadband expansion and the workforce development avenues to access those high-demand jobs.
- Utilize the upcoming regional Comprehensive Economic Development Strategy (CEDS) process to emphasize the importance of digital inclusion and developing the future broadband workforce for the region.
- Establish programs within the K-12 education system to inform students of the quality career opportunities linked to broadband and garner interest for specific training programs related to

high-demand jobs that often have low interest among high school students, like electrical programs.

- Invite parents, families, teachers, and school counselors to participate in events that help expose young people to careers in broadband, including externship opportunities with local ISPs for local educators.
- Target adult learners who are looking to upskill or reskill (e.g., integrated education and training models that allow workers to build basic skills like ESL in the context of learning a technical skill).
- Collaborate with trusted community organizations, like the county library, to reach individuals who may face barriers to participation in the broadband workforce, such as rural or isolated residents who have challenges accessing training or underrepresented groups.
- Utilize regional resources like partnering with the COG on their workforce outreach grants or partnering with Workforce Solutions and Coastal Bend College to promote broadband careers through their mobile learning lab as ways to grow awareness for broadband opportunities.
- Establish a pilot digital navigator and digital ambassador program to offer entry points for residents interested in developing their digital skills and entering tech careers, while simultaneously growing the public's knowledge of essential digital skills for navigating telehealth and other community resources.
- Continue discussions with counties like Jim Hogg, Jim Wells, and Duval about the distinct digital and broadband needs for their similar regional populations.

6.4.4 Diversification

Diversify talent pipelines and ensure broadband career pathways are accessible.

- Actively recruit underrepresented groups such as women and people of color, including offering recruitment materials in Spanish.
- Target veterans whose technical skills can be retrained for broadband and offer transitional programming and training.
- Adopt a detailed prescreening application process for students interested in broadband workforce development training to identify any barriers to training completion (such as childcare, transportation, or housing) and offer wraparound supports accordingly.
- Partner with broadband providers to encourage second chance hiring programs for individuals with felony records.
- Encourage local childcare providers to participate in the Texas Rising Star program and accept childcare scholarships for eligible families

6.4.5 Funding

Identify and pursue public regional, state and federal funding resources to scale and sustain broadband workforce development programs.

- Utilize state funding opportunities like the Jobs and Education for Texans (JET) Grant Program which allows CTE programs to utilize up-to-date equipment in the classroom, better preparing students for real work environments.
- Apply for the Skills Development Fund which helps businesses train and retrain workers through partnerships with public community or technical colleges, workforce boards, or the Texas A&M Extension Service.
- Foster collaboration between workforce development boards and Type A or Type B economic development corporations for training through the High Demand Job Training Grant Program.

- Seek funding through the Lone Star Workforce of the Future Fund which provides public community or technical colleges and nonprofit organizations with up to $250,000 to help train workers in high-demand occupations.
- Ensure area training providers have applied for the eligible training provider list through the Texas Workforce Commission to access Workforce Innovation and Opportunity Act (WIOA) funds for eligible students.

7 Digital Opportunities Strategy and Needs Identification

7.1 Digital Opportunity Background

Despite significant global progress in digital connectivity, 2.7 billion people still remain disconnected from the internet. This digital divide highlights ongoing challenges in achieving universal access, especially in underdeveloped regions where infrastructure and affordability issues persist. Digital Opportunity, according to the Texas Digital Opportunity Plan (TDOP), is the full set of conditions required to achieve digital access for all Texans, including widespread affordable and reliable broadband internet, high-quality device access, digital skills training and cybersecurity awareness. [14]

According to current studies, the rate of broadband availability and adoption is lower across the U.S. in locations with higher rates of poverty.[15] In a data study commissioned by the State Education Department, digital access was found to vary greatly across geography as well as socio-economic groups — these include populations in rural areas, communities with low rates of literacy and digital skills, aging individuals, and disabled communities.[16] Therefore, bridging the digital divide requires localized and individualized assessments and intervention strategies. Digital opportunity acknowledges the differences between individuals and groups of individuals in terms of skills, resources, and opportunities to successfully participate in the digital world, and empowers them to do so.

According to the Texas BDO's TDOP, the vision for ***digital opportunity*** is stated as such:

> *"Improve quality of life and promote economic growth by enabling fast, reliable and affordable broadband connectivity for all residents and businesses of Texas, promoting universal broadband adoption and providing access to digital skills development."*[17]

One of the main goals of the TDOP is to 'Expand adoption of reliable, affordable broadband internet service at home for all Texans, including individuals belonging to covered populations. 'Covered Populations', as defined by the Digital Equity Act of 2021, include:

(1) Individuals who live in Covered Households (defined as households with income from the most recently completed year of not more than 150 percent of the poverty level).
(2) Aging individuals.
(3) Incarcerated individuals, other than individuals who are incarcerated in a Federal correctional facility.
(4) Veterans.
(5) Individuals with disabilities.
(6) Individuals with a language barrier, including English learners and those with low levels of literacy.
(7) Individuals who are members of a racial or ethnic minority group.
(8) Individuals who primarily reside in a rural area.

[14] Collins, R., Delmar, D., & Edson, S. (2024, August 22). Definitions. National Digital Inclusion Alliance. https://www.digitalinclusion.org/definitions/
[15] Garnett, P. (2024, January 20). *A handbook for the effective administration of state and Local Digital Equity Programs*. Vernonburg Group. https://www.vernonburggroup.com/publications/a-handbook-for-the-effective-administration-of-state-and-local-digital-equity-programs
[16] Moore, L. (2021, June). Achieving Digital Equity in New York. New York State Library. https://www.nysl.nysed.gov/
[17] Texas Broadband Development Office. (2024, March). Texas Digital Opportunity Plan. DIGITAL OPPORTUNITY PROGRAM. https://comptroller.texas.gov/programs/broadband/funding/digital-opportunity/

7.2 An Ecosystem Approach

The framework for understanding digital opportunity is multifaceted and encompasses the interconnected systems of technology, policies, institutions, resources, and communities that create opportunities for every participant to leverage broadband for growth, innovation, and inclusion. Ecosystems encourage collaboration and help drive economic development, enhance education, and promote inclusion. The term 'digital opportunity ecosystems' as defined by the NTIA states-

> *"A digital opportunity ecosystem is a combination of programs and policies that meets a geographic community's unique and diverse needs. Coordinating entities work together in an ecosystem to address all aspects of digital divide, including affordable broadband, devices, and skill."*[18]

With an ecosystem approach, multiple organizations and/or informal groups are relied on to assimilate new users into digital adoption and share resources, social norms, practices, and support related to using these technologies.[19]

According to the FCC[20], three core pillars must be addressed to bridge the digital divide and achieve digital opportunity — availability, affordability and adoption.[21]

- **Availability:** Is there sufficient infrastructure and coverage to deliver reliable, high-speed wired or wireless broadband service and technology tools for learning?
- **Affordability:** Can learners and caregivers pay for the total cost of maintaining reliable, high-speed broadband service and technology tools for learning?
- **Adoption:** Do learners and caregivers have the information, support and skill to obtain regular, adequate access to reliable, high-speed broadband service and technology tools for learning?

The Office of Minority Broadband Initiative's fiscal *2023 Annual Report* states that a part of expanding access to broadband (as a part of the initiative's authorizing legislation) means collaborating with anchor institutions and their stakeholders to achieve digital opportunity within the anchor community.

> *"Anchor institutions, specifically institutions of higher education (IHEs), are force-multipliers for expanding broadband access, building partnerships and leading communities toward economic growth and community vitality."*[22]

Additionally, the TDOP's primary strategies to address the needs and barriers of unserved and underserved emphasize partnering with and funding statewide organizations and funding local partners. Investment and collaboration with existing community anchor institutions and public-private partnerships is one of the best strategies for bridging the digital divide.

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[18] Digital Equity Guide for the states. (2022, November). https://broadbandusa.ntia.doc.gov/sites/default/files/2022-12/Digital_Equity_Guide_for_States_11.28.22.pdf
[19] Cook County. (2023, October). Cook County Digital Equity Plan. Cook County Digital Equity. https://www.cookCountyil.gov/service/digital-equity
[20] Federal Communications Commission FCC 22-67 . (2022b, August). https://docs.fcc.gov/public/attachments/FCC-22-67A1.pdf
[21] US Department of Education. (2022, September). Advancing Digital Equity for all. Advancing Digital Equity for All. https://tech.ed.gov/files/2022/09/DEER-Resource-Guide_FINAL.pdf
[22] U.S. Department of Housing and Urban Development. (2013). Building Resiliency: The Role of Anchor Institutions in Sustaining Community Economic Development

It's recommended that counties develop a more robust digital opportunity plan to further identify digital inclusion gaps for addressing needs across availability, affordability, and adoption. The digital opportunity plan can be developed at a regional level since the partnership between counties can solidify a networked system for residents to tap into. Much of the available research on digital opportunity and best practices over the past years believe that this comprehensive understanding of the ecosystem is founded on human-centered thinking and empowerment, where solutions are community driven.[23] [24]

It is recommended to use the TAP Report as a supplement to develop a more robust digital opportunity plan. The methodology should be customized to align with the specific characteristics of the region and the community's definition of success. While quantitative insights can be derived from data and coverage maps, incorporating multiple qualitative data sources may be necessary to fully understand local needs. Tailored strategies should be applied based on the unique requirements and context of each community. The overarching objective of digital opportunity is to ensure access to high-speed broadband, technology devices, IT support, and digital literacy education, with a focus on inclusivity.

7.3 Digital Equity Act Funding

7.3.1 Digital Equity Act Summary

The Digital Equity Act (DEA) requires the NTIA to establish grant programs for promoting digital equity, supporting digital inclusion activities, and building capacity for state-led efforts to increase adoption of broadband by their residents.[25] The Digital Equity Act provides $2.75 billion to establish three grant programs that promote digital equity and inclusion. The following programs listed aim to ensure that all people and communities have the skills, technology, and capacity needed to reap the full benefits of our digital economy.[26]

- **State Digital Equity Capacity Grant Program**: A $1.44 billion formula grant program to make distributions to states based on their populations, demographics, and availability and adoption of broadband. (Although currently on pause, as of April 2025).
- **Digital Equity Competitive Grant Program**: A $1.25 billion grant program supporting efforts to achieve digital equity, promote digital inclusion and stimulate adoption of broadband.
- **State Digital Equity Planning Grant Program**: A $60 million formula grant program for states, territories and tribal governments to develop digital equity plans.

7.3.2 Texas Digital Opportunity Plan Summary

In March of 2024, the NTIA accepted the TDOP — the shaping of this report focused strongly on unserved and underserved populations across the state. According to the US Census Bureau, Texas ranks 32 out of 50 for internet adoption.[27] To bridge the digital divide, the TDOP's purpose seeks to navigate non-infrastructure related digital opportunity investments and provide insight and strategies to deploy Capacity Grant funds from the NTIA over the next five years.

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[23] Bridging the digital divide: Empowering communities through technology. Civica. (n.d.). https://www.civica.com/en-us/campaigns/insights-from-psn-2023/bridging-the-digital-divide-empowering-communities-through-technology/

[24] Aryal, A. (2024). Vol. 25 (2024): Digital Empowerment: Transforming Community Growth, Health, Economic Development, and Conservation through Innovative Technologies. View of from digital divide to Digital Empowerment: Transforming Marginalized Communities. https://socialinnovationsjournal.com/index.php/sij/article/view/8242/6762

[25] H.R.1841 - 117th Congress (2021-2022): Digital Equity Act of 2021. (2021, March 12). https://www.congress.gov/bill/117th-congress/house-bill/1841

[26] Department of Commerce, National Telecommunications and Information Administration. (n.d.). Digital Equity Act Programs. Internet for All. https://www.internetforall.gov/program/digital-equity-act-programs

[27] BDO, T. (2024). Texas Digital Opportunity Hub. https://www.digitalopportunityfortexas.com/

The BDO disseminated surveys, organized a statewide listening tour, and convened working groups and task forces. The insights gained from these engagement efforts significantly influenced the development of the TDOP's goals and strategies.

The report encompasses the state policy priorities and efforts in various areas including economic and workforce development, education, health, and business. To track these outcomes, they use the NTIA's categories of measurable objectives:

(1) the availability of, and affordability of access to, fixed and wireless broadband technology;
(2) the online accessibility and inclusivity of public resources and services;
(3) digital literacy;
(4) awareness of, and the use of, measures to secure the online privacy of, and cybersecurity with respect to, an individual; and
(5) availability and affordability of consumer devices and technical support for those devices.

The TDOP is also designed to reach people who have historically faced barriers in terms of digital opportunity. The Digital Equity Act of 2021 refers to these groups as 'Covered Populations,' and outlines a certain percentage of grant funds to be distributed to these Covered Populations in proportion to the total number of individuals. These population groups include veterans, immigrants, low-income households, and others — almost 86 percent of the state of Texas falls within one of the Covered Populations, with the largest category within the Covered Populations being racial/ethnic minorities (58.1 percent).

7.4 Broadband Funding

7.4.1 Broadband, Equity, Access, and Deployment Program Summary

Funded by the Bipartisan Infrastructure Law, BEAD is a federal grant program that aims to get all Americans online by funding partnerships between states or territories, communities, and stakeholders to build infrastructure where we need it to and increase adoption of high-speed internet. BEAD prioritizes unserved locations that have no internet access or that only have access under 25/3 Mbps and underserved locations that only have access under 100/20 Mbps.[28]

Congress split BEAD funding into three formula-based allocations: minimum, high-cost, and remaining funds. The minimum allocation to states, Washington, D.C., and Puerto Rico will be $100 million each; other U.S. territories will receive minimum allocations of $25 million. On June 26, 2023, the NTIA announced Texas' allocation totaling $3.3 billion in federal funding for the BEAD Program.[29] This is the largest broadband funding opportunity. Eligible BEAD Subgrantees include co-ops, nonprofits, public private partnerships, private companies, utilities, public utility districts, or local government.

The Texas BDO's BEAD Challenge Process began in December 2024, and the application process will open in 2025.

[28] National Telecommunications and Information Administration. (n.d.). Broadband Equity Access and Deployment Program. BroadbandUSA. https://broadbandusa.ntia.doc.gov/funding-programs/broadband-equity-access-and-deployment-bead-program
[29] https://comptroller.texas.gov/programs/broadband/funding/bead/

7.4.2 Texas Low Earth Orbit (LEO) Satellite Broadband Grant Program (LEO Program)

The introduction of the LEO Program has been discussed by the BDO briefly through various webinars, but the following information is the first major announcement regarding what to expect from the program and timelines.

On April 9, 2025, the Texas Comptroller of Public Accounts announced the opening of a grant window for the Texas Low Earth Orbit (LEO) Satellite Broadband Grant Program (LEO Program). Applications will be accepted until May 23, 2025.

> *"The LEO Program is a pilot program to assess the feasibility of using satellite technology to expand broadband service capacity to hard-to-reach locations, particularly locations in rural areas that face significant barriers to digital connectivity due to geographical challenges or that may have lacked acceptable proposals under past grant programs.*
>
> *This competitive grant program seeks to award funds to qualified LEO providers to build high-speed, low-latency satellite internet access and capacity to eligible locations. The initial pilot phase will focus on areas of the state that did not attract competitive bids in prior grant programs. The program will start with a pilot program encompassing a limited block of initial network reservations. As the number of subscriptions increase, the LEO Program may incrementally expand up to 10,000 locations. The BDO will periodically evaluate the pilot's impact and success, including the total number of subscriptions, before determining the feasibility of a potential statewide expansion effort."*

Brooks County unserved locations are not specifically targeted with this pilot program. The only BSLs eligible for this program are in the following counties: Brewster County, Culberson County, Hudspeth County, Jeff Davis County, and Presidio County. The number of eligible BSLs located in the five counties designated within the initial pilot phase of the program is approximately 3,400 BSLs. BDO is seeking applications from qualified LEO Service Providers for a block of network reservations. The initial pilot phase requires a minimum block of 500 network reservations scalable to 10,000 reservations.

Applicants (LEO Service Providers) must provide information on the scale and timeline for deployment, the necessary equipment to be installed, any overhead costs, and the proposed reservation process. A detailed plan to successfully enroll subscribers in the five counties must be included with information about subscription enrollment, service fulfillment, customer support, and marketing and outreach to successful respondents. Providers will ship (at no cost to the subscriber), all hardware and equipment, including standard connectivity technology, user-training materials, and installation guidance, required for installing LEO broadband service that meets the speed performance requirements. Note that subscribers will be responsible for directly paying their monthly subscription fees.

August 2025 Update: The BDO issued a NOFA for the program but received no qualified applications. Consequently, the office decided to cancel the solicitation. There is no plan to reissue the solicitation at this time. LEO satellite internet service that meets the broadband speed requirements is an eligible technology solution for the BEAD Program in Texas.

7.5 Funding Opportunities Table

There are several programs for the county to consider applying for or partnering with on an application. These include the following programs administered through the Texas BDO, United States Department of Agriculture (USDA), and NTIA. There are a range of factors for consideration, including match requirements, current levels of service, partnership agreements and other key criteria, which would impact

which funding source(s) should be applied for and leveraged collectively to bring as much funding to the county as possible.

Exhibit 47: Funding Opportunities Table

Grant Program	Funding Agency	Description	Timeline	Total Allocation
State Digital Equity Capacity Grant Program	NTIA	States to implement plans and promote digital inclusion; additionally, the program funds an annual grant program for five years.	Currently Paused	Texas' tentative award allocation is $55.6 million.
Digital Equity Competitive Grant Program	NTIA	Awards will focus on addressing the needs of the Covered Populations not met by the Capacity Grant Program and will strive for a diverse pool of recipients.	Winter 2024 – April 2025	$1.25 billion
Broadband Equity, Access, And Deployment (BEAD) Program	NTIA	Through state allocation and planning, this program intends to expand high-speed internet access by funding planning, infrastructure deployment and adoption programs.	2025	$42.5 billion under IIJA. Texas was allocated $3.3 billion. State BDO call for projects in Summer 2024. NTIA approval of State plan anticipated spring 2025.
Texas Proposition 8: Broadband Infrastructure Fund Amendment	State of Texas, administered by the Texas Comptroller	HB 9 would create the Texas Broadband Infrastructure Fund (BIF) administered by the comptroller. Funds in the BIF could only be used for expanding broadband and telecommunications across the state	November 2023 (Approved by Texas Voters)	Anticipated $1.5 billion.
Texas LEO Satellite Broadband Grant Program (LEO Program)	State of Texas BDO, Texas Comptroller	A competitive grant program to support the deployment of Low Earth Orbit (LEO) satellite broadband service in rural, unserved areas of Texas.	Application Window April 9-May 23, 2025 at 2 p.m.	$30 million

Grant Program	Funding Agency	Description	Timeline	Total Allocation
USDA ReConnect (Future Rounds)	USDA	Offers loans, grants, and loan-grant combinations to facilitate broadband deployment in areas of rural America that currently do not have sufficient access to broadband.	ReConnect Round 6 (TBA)	Available funding varies based on loans and grants.
USDA Distance and Telemedicine	USDA	Helps rural communities use advanced telecommunications technology to connect to each other, overcoming the effects of remoteness and low population density.	April 2024	Agency estimates that approximately $60 million will be available for fiscal 2024.

7.6 County-specific Digital Opportunities Planning

7.6.1 Digital Opportunity Needs Assessment

Brooks County is home to a few community anchor institutions, most of which offer resources for basic needs like food, shelter, and immediate medical care. There are currently no community programs that offer robust resources for digital opportunity. Federal funds should be used to increase investment into existing afterschool programs, community centers, and neighborhood hubs — local organizations should also be equipped with robust high-speed Internet and useful and relevant software for their communities.

- **The Ed Rachal Memorial Library**
  - This public library is located in Falfurrias and has digital resources available.
- **Community Action Health Center – Brooks County.**
  - A community health clinic. Enroll in their program for low-cost services. Services include: Pediatrics, Dental, Mental Health, Women.
- **Brooks County Indigent Health Care Program**
  - This program provides basic medical services to residents of this county who cannot receive health care coverage from any other source and who are eligible for the program.
- **Falfurrias United Methodist Church Pantry Program**
  - Falfurrias United Methodist Church gives free food to people in-need on the 2nd Friday of every month.
- **Falfurrias Housing Authority**
- **Veterans Services of Brooks County**
  - There is a veteran service officer available to veterans living in Brooks County and the region.
- **Texas Health and Human Services, Falfurrias**
  - This location has a Texas Department of Aging and Disability Services office.

According to a Community Needs Assessment done by Community Action Corporation of South Texas in 2023[18], one of Brooks County's two census tracts are considered food deserts — any neighborhood that lacks healthy food sources due to income level, distance to supermarkets or vehicle access. The census

tract that is a food desert is the most populous census tract in the county and therefore 71.7 percent of the population lives in a food desert.

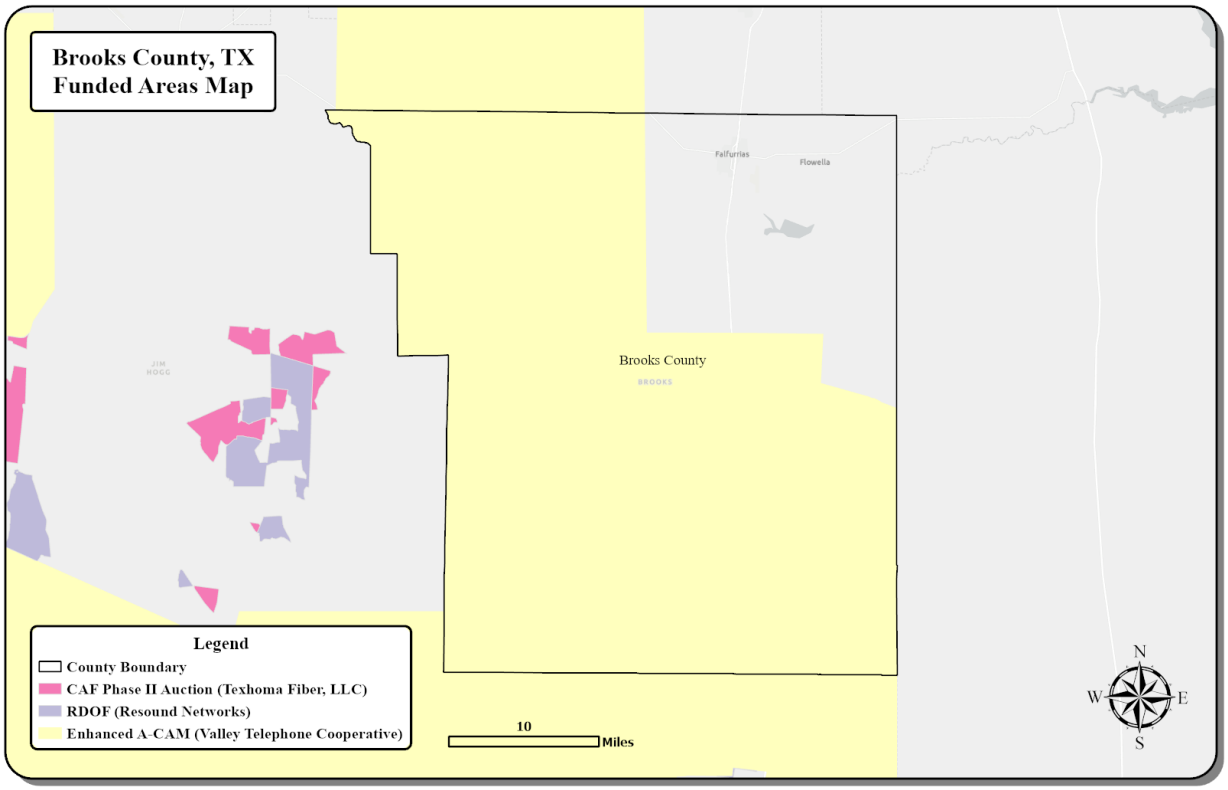
Brooks County is also home to several communities that are listed under the Covered Populations. Most notably, the percentage of low-income households is 14 percent higher than Texas.

Exhibit 48: Brooks County, Covered Populations

Covered Populations	Texas	Brooks County
Veterans	5.1%	4.6%
Low-Income Households	19.3%	37.6%
Individuals Living With Disabilities	11.3%	22.1%
Limited English Proficiency	12.8%	9.9%
Racial Or Ethnic Minorities	58.1%	92.9%
Age 60+	17.5%	25.2%
Incarcerated	0.7%	0.2%
Population In Households Lacking Fixed Broadband Availability	7.2%	38.1%

Source: U.S. Census Bureau, 2022 American Community Survey 5-Year Estimates; United States Census Bureau. (2019). Digital Equity Act Population Viewer, Texas Digital Opportunity Hub

Exhibit 49: Brooks County Funded Areas Map



FCC Enhanced ACAM – Valley Telephone Cooperative, Inc. is an accepted carrier for the Enhanced ACAM (E-ACAM) program which provides funds to deploy broadband service with speeds of at least 100/20 Mbps. VTCI's planned buildout will serve up to 353 locations. VTCI's allocation covers a most of Brooks County except for the Northeastern corner of the county where Falfurrias and Flowella are located.

NTIA BEAD - In terms of broadband funding eligibility, there are 140 BEAD eligible locations in Brooks County, 133 are unserved and 7 are underserved. The E-ACAM locations will be ineligible for BEAD funding. Note that these estimates are based on Pre-Challenge BEAD data.

7.7 Stakeholder Outreach

The stakeholder and outreach strategy portions of this report (Task 1 and Task 2) gathered insight into the county's existing broadband and social infrastructure. During the outreach process, stakeholders were consulted regarding existing digital opportunity programs and resources available to the residents of the county.

Key Takeaways

- Los Mestenos and the Coastal Bend Workforce Development provided most workforce development support
- No current digital literacy or device training programs are available in the county

7.8 Digital Opportunity Strategy Planning

The Digital Opportunity Roadmap is divided into three phases that progressively build on each other to create the required momentum for change. The three imperatives for the roadmap are availability, affordability and adoption.

- Phase 1: Laying the groundwork.
    - Developing the structures, processes and influence necessary to set the foundation for change.
- Phase 2: Preparing a strategy.
    - Operationalizing goals, actively communicating and supporting changes while addressing challenges.
- Phase 3: Monitor and update strategy.
    - Iterating, refining and solidifying changes in the county's network, while expanding new programs or parts.

Each action area has pivotal implementation steps to take in each phase that help deliver on the goals for change. Mapping dependencies across areas also highlights the interconnectedness of the roadmap.

Recommendations

BEAD Grant Recommendations

(1) For the broader BEAD application, the county should partner with a local provider that has a strong track record infrastructure provision and customer service in the region to serve the eligible BEAD locations.

Digital Opportunity Recommendations

(1) The county should adopt a Digital Opportunity Strategy to address adoption and affordability challenges specific to covered populations in the county.
(2) Although currently on pause, as of April 2025, the county or an eligible entity should apply for the Digital Equity Capacity Grant to fund digital adoption programs in the community once the program is reopened. Some of the relevant eligible entity types in this county under this grant include: the county (political subdivision of state), not-for-profit entity, community anchor institution, or a partnership.
    a. A specific entity the county should consider a partnership with the Ed Rachal Memorial Library for a Texas Digital Equity Capacity Grant application.
    b. A regional application through the Coastal Bend Council of Government could also provide a path to expand digital adoption in Brooks County.

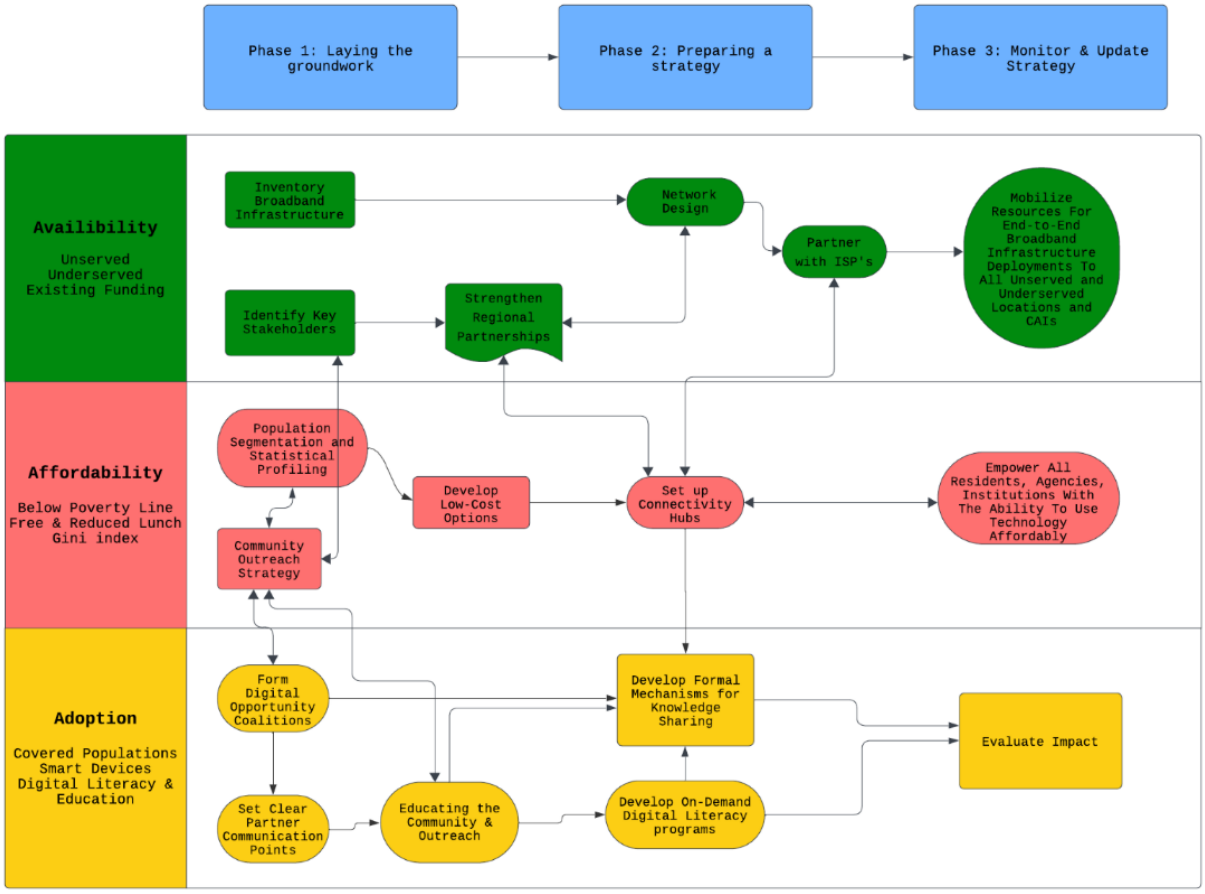
Colonia Area Specific Recommendation

(1) The county should assess using the Colonia Fund - Construction to fund broadband infrastructure and related facilities for the Colonia areas in Brooks County.
    a. This Texas Department of Agriculture program is designed to primarily upgrade water and sewer infrastructure but joint trenching to install conduit or installation of a water tower could assist with broadband deployment in these communities.

E-ACAM Coordination Recommendation

(1) Engage with the provider building out broadband service under the E-ACAM obligation in the county regarding the timeline for the buildout to better understand the technology deployment, buildout timeline, and project area details.

Exhibit 50: Digital Opportunities Roadmap



8 Network Design Assessments

Network Design Assessments introduce the purpose and intent of the High-Level Design (HLD). This section provides proposed broadband solutions that serve commercial, residential, and public facilities where they are most needed — where gaps are identifiable and align with local broadband goals. This includes different idealized county solutions. Guidance throughout the network development process may continue to refine this approach as more information is gathered until deployment occurs.

PLEASE NOTE: The National Broadband Serviceable Location Fabric is a common data set of all residential and business locations (or structures) in the U.S. where fixed broadband internet access service is or can be installed. Each location in the Fabric is called a BSL, and the definition of a BSL is determined by the FCC. The Fabric is the foundational location database that is being used across several government programs, including the NTIA's BEAD program, the FCC's Broadband Data Collection, National Broadband Maps and more. CostQuest is the official contractor and provider of the National Serviceable Location Fabric data. Data used within this report was obtained from CostQuest and is Version 5 as of June 30, 2024. Version 5 data was announced as the data source for the Texas BDO's BEAD Subgrantee Selection Process. At the time of this report, the Texas BEAD Challenge Process is still ongoing, and no Final Determination has been released to indicate the final list of eligible BEAD locations. Please be aware that ISPs may have continued construction and implementation of new service locations since Version 5, and the data within may be outdated by the time this report finalizes. Please conduct continuing conversations with potential partners to see where changes may have been made.

8.1 Preliminary Network Design Assessments

8.1.1 Primary Network Design Assessments

Middle- and last-mile HLDs can play an important role in helping communities and ISPs understand options to reach unserved and underserved BSLs. Determining potential routes and generating a cost per passing for each BSL for the construction of network infrastructure sheds light on the feasibility of options and provides data for discussions of those options.

Understanding existing middle-mile infrastructure and last-mile build-out options enables communities and ISPs to evaluate expansion opportunities. HLDs with high-level cost estimates highlight financial barriers that have traditionally deterred private ISPs from investing in unserved and underserved areas. The insights derived from the HLDs could promote P3s by reducing backhaul expenses and establishing connectivity for county and municipal facilities where it offers the highest impact.

These high-level cost estimates may also support grant applications. In discussions with potential ISP partners, it is beneficial to identify ISPs currently providing service and those in close proximity to target areas. While any ISP might consider building within the HLD areas, the closest ISP often presents the most financially viable option for network extension.

To fully assess the impact of the HLD developed for Brooks County, it is essential to understand the current last-mile provider landscape and the geographic distribution of ISPs. The accompanying map provides a visual representation of existing service coverage.

Exhibit 51: Self-Reported ISPs in Brooks County

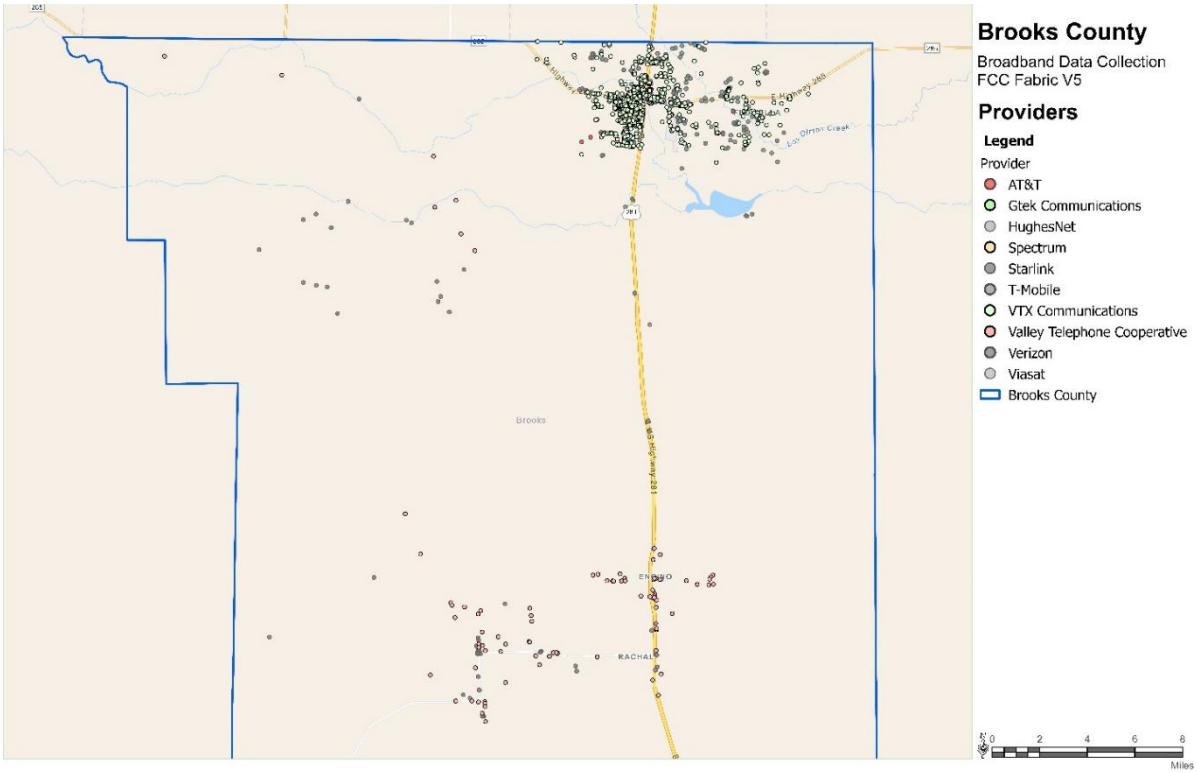
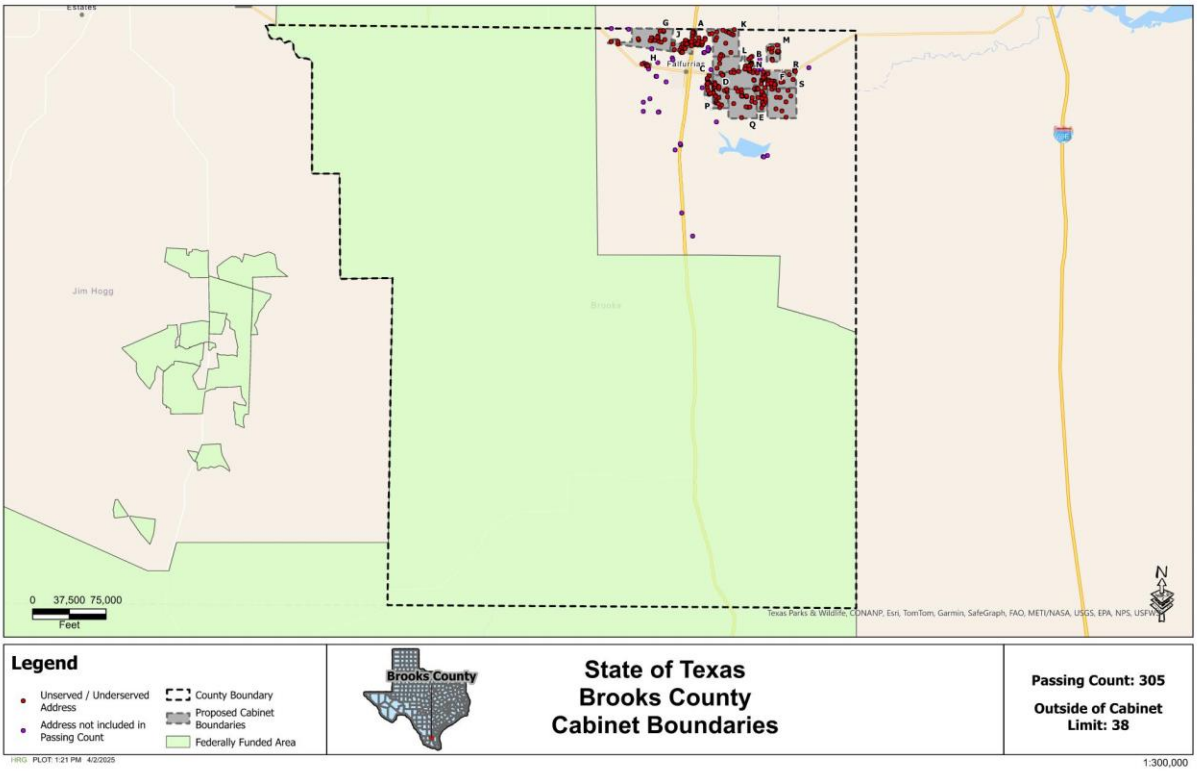


Exhibit 52: HLD Areas for Brooks County



Throughout Brooks County, as seen in Exhibit 51, Falfurrias and Encino are the only two prominent areas of visible clustering of ISP coverage. There does not appear to be one prominent ISP in the region with both areas displaying a wide variety of ISPs. However, between these two areas it appears that AT&T, Gtek Communications, Spectrum, and VTX Communications have a large cluster in Falfurrias. Both T-Mobile and Verizon have a large cluster in both Falfurrias and Encino, with a few service locations extending west of Encino. Valley Telephone Cooperative appears to be the only ISP with clusters in and to the west of Encino, along with clusters southwest of Falfurrias. It would make sense to discuss any network designs for unserved and underserved addresses in proximity to these ISPs with the closest ISP(s).

Exhibit 52 shows the sample HLD areas for Brooks County. Each letter labels a "cabinet" area. A cabinet area can be defined as an individual network within which all of the extensions to the BSLs tie back to one cabinet. Each cabinet must be tied to a middle-mile source (these are not defined or costed in these HLDs). The unserved and underserved BSLs are divided into cabinets to provide the most efficient and cost-effective last-mile options. Each cabinet area can be discussed with an ISP or cabinets can be clustered together if an ISP wants to extend their network to multiple HLD areas. Cabinet areas were determined by the locations and numbers of unserved and underserved BSLs.

Please see the appendices for the network design, unserved and underserved BSL counts and high-level cost per passing.

The HLDs for last-mile routes were planned to utilize county ROW where possible. Although ROW availability was not explicitly verified, the rural nature of HLD areas suggests minimal ROW constraints. Additionally, ownership of ROW along these routes was not thoroughly investigated.

A key consideration in network design was mitigating outages due to natural disasters and other disruptive events. The proposed HLD features an entirely underground fiber configuration, except for the most isolated addresses. For these remote locations, fiber deployment was deemed infeasible, even with grant funding. These locations will likely require alternative solutions, such as point-to-point wireless connections, to provide service. While this solution does not offer the same level of resilience as underground fiber, it remains a cost-effective alternative.

Assessing redundancy within the surrounding middle-mile network is also critical. As seen in Section 5.2.1 Potential Partners in Brooks County, FiberLight and VTX1 / Valley Telephone Cooperative are the only middle-mile providers. In discussions with the middle-mile providers, both providers indicated their network includes redundancy. However, prior to any next steps that the county takes regarding partnership or implementation, the county should verify this information from all the providers.

Broadband redundancy offers several advantages that enhance network reliability, performance, and resilience. One of the key benefits is increased reliability, as redundancy promotes continuous network operation even in the event of a failure. This is particularly important for businesses, public services, and emergency responders who rely on uninterrupted connectivity. Additionally, redundancy improves disaster resilience by protecting against service disruptions caused by natural disasters, equipment failures, or cyberattacks. Another advantage is load balancing, which distributes network traffic across multiple connections, preventing bottlenecks and enhancing overall performance. By promoting minimal service interruptions, broadband redundancy also improves the Quality of Service (QoS), which is crucial for industries such as healthcare, finance, and e-commerce. Furthermore, redundancy supports business continuity, allowing organizations to maintain operations even during network failures. Some industries also require redundancy to meet regulatory compliance and service-level agreements (SLAs). Public safety networks greatly benefit from redundant broadband infrastructure, promoting emergency

communication remains operational during crises. Lastly, redundancy enables network scalability, allowing for future upgrades and expansion while maintaining service reliability.

Despite these advantages, broadband redundancy comes with several challenges. The high cost of deployment is a major obstacle, as building multiple network pathways and infrastructure requires substantial financial investment. Geographic limitations also pose a challenge, particularly in rural or remote areas where achieving redundancy is difficult due to limited infrastructure and challenging terrain. Coordinating infrastructure between multiple ISPs, utility companies, and municipalities adds further complexity and can be time-consuming. Regulatory and permitting hurdles, such as obtaining ROW, can delay deployment due to legal and bureaucratic requirements. Ongoing maintenance costs are another consideration, as redundant networks require continuous monitoring, updates, and repairs to remain effective. Additionally, redundancy may not be truly effective if it relies on a single provider, as any failure within that provider's network could still result in service disruption. Poorly optimized redundancy can also introduce latency or inefficiencies if network management is not properly configured. Lastly, managing a redundant network requires sophisticated monitoring systems, routing protocols, and failover mechanisms to promote seamless transitions between primary and backup connections.

While the primary focus of HLDs is to address broadband deficiencies, they are also designed to accommodate future growth while maintaining stability and reliability. To this end, the HLDs incorporate provisions for excess capacity, allowing for potential network expansion. Designers aimed to balance capacity with cost efficiency. It is crucial to discuss this capacity with any P3 partner to promote alignment with their network plans. Typically, ISPs will perform their own HLD. The maps and costs included in this report are meant to help the county in discussions with ISPs to collaboratively reach the best outcomes for unserved and underserved BSLs.

Additionally, the design incorporates a GPON architecture with a cabinet in each design area. This architecture supports scalability and adaptability. The layout and capacity of the network should be reviewed with any P3 partner to promote seamless integration with existing infrastructure and future plans.

8.2 Primary Preliminary Network Design Assessments

The current HLD prioritizes fiber extension to unserved and underserved BSLs in Brooks County. Additional municipal or public access points can be addressed in a secondary network design if necessary. Considering middle-mile infrastructure, HLD network designs, and geographic constraints, targeted design segments may reach additional addresses.

The availability of construction labor and materials remains a key concern due to the substantial grant funding allocated for broadband networks. Project timelines should be carefully evaluated in discussions with ISPs and contractors. Several factors influence project duration, including:

- Partnership formation
- Network design finalization
- Bidding processes
- Contractor and material availability
- Agreement terms

Given these variables, establishing an exact timeline is not feasible until agreements are finalized. Proactive planning and stakeholder communication are essential to set realistic expectations and ensure effective project management.

8.3 Cost Analysis of Assessments

HLDs utilize buried fiber to extend connectivity to underserved addresses as efficiently and cost-effectively as possible. The designs employ a GPON architecture, incorporating a cabinet in each highlighted area. While individual ISPs may not require a cabinet at every designated location, we have included them to account for potential infrastructure costs if needed.

For very remote addresses, alternative solutions such as point-to-point connections may be necessary. However, the costs for these solutions have not been included in the current design due to the need for a detailed assessment of distance and topography.

Each HLD includes additional capacity to allow for future network growth without significantly increasing costs. The goal is to provide enough excess capacity for expansion while maintaining economic feasibility.

By prioritizing the deployment of buried fiber and incorporating flexible design elements, these HLDs aim to deliver robust and scalable broadband solutions to the unserved and underserved areas, fostering greater connectivity and digital inclusion. The HLDs in this section of the report serve as a valuable tool for discussions with potential P3 providers. It is recommended that the county utilize these HLDs to explore options with providers regarding both network designs and BSLs, as well as other critical connection points.

Given that ISPs will likely require grant funding to make a viable business case for reaching these addresses, discussing network design and BSLs is crucial for verifying cost estimates in grant applications. ISPs may already have network extension plans that these HLDs could complement. Therefore, engaging ISPs in discussions about their needs and options, alongside municipal opportunities, will be essential in finalizing the network designs.

Further collaboration with ISPs are necessary to promote policies and permit procedures support efficient management of ROW while facilitating network expansion in an organized manner. Establishing clear discussions on policies and procedures with providers can help create a true partnership within a P3 arrangement. While communities should maintain control over their ROWs, working collaboratively with ISPs can streamline processes and foster mutual benefits.

If a community provides financial resources or assets in P3 negotiations, it is critical to promote the use of public funds and infrastructure complies with local, state, and federal regulations. From meetings conducted with middle- and last-mile providers, most ISPs have expressed strong interest and a willingness to collaborate with the county and local communities to enhance broadband services.

There are multiple goals that can be pursued within P3 discussions, as outlined in this report. These include stakeholder engagement, ISP collaboration, digital equity initiatives, and workforce development analyses. These elements serve as foundational components for addressing underserved and unserved BSLs while aligning broadband connectivity with broader community objectives. By integrating these diverse data sources into discussions and negotiations with ISPs, the overall benefits of broadband expansion efforts can be maximized.

8.4 Legal / Risk Analysis of Assessments

The broadband industry is undergoing a monumental transformation, driven by an influx of grant funding that is reshaping networks, ISPs, construction practices, policies, and procedures. While these changes present significant opportunities, they also introduce potential risks that must be carefully managed.

In a P3 arrangement, if the community does not contribute municipal funds, the financial risk largely falls on the providers. However, if ISPs overextend themselves or make imprudent financial decisions, the county or municipality could be left with unfinished projects. Therefore, it is essential to assess the financial stability and business strength of ISPs before entering into negotiations.

In many rural areas, a single ISP may be responsible for last-mile services. During P3 negotiations, it is crucial to understand their pricing structures and how these might change in the event of an acquisition by another entity.

Additionally, communities may be asked to support grant applications through letters of support. When multiple ISPs seek support, deciding which provider to endorse can be challenging. Establishing a selection framework can help promote objective decision-making, with key criteria including business stability, commitment to connecting municipal facilities and community public access points (CPAs), pricing guarantees, and long-term growth strategies.

If a community invests public funds in broadband expansion, it is imperative to clearly define what it will receive in return and establish oversight mechanisms to manage that investment. In such P3 negotiations, the role of the municipal attorney is critical. If the municipality holds an ownership stake, clear definitions of responsibilities for construction, operations, and maintenance must be established to promote accountability.

Through thorough discussions and careful consideration of these factors, communities can create P3 arrangements that are both beneficial and sustainable, effectively balancing the risks and rewards of broadband expansion.

8.5 Research and Analysis on Comparable Networks

When evaluating the HLD and planning future steps, Brooks County should examine case studies from the City of Mont Belvieu, Texas, and the City of McKinney, Texas, to understand their broadband network designs. This analysis will equip Brooks County with valuable insights into various design routes, thereby laying a solid foundation for future design discussions.

City of Mont Belvieu, Texas:

Some communities may elect to build, own, and operate their own network. However, in Texas, there are specific restrictions on how this can be accomplished. Mont Belvieu is one community that has successfully taken this approach.

The challenges of this path include managing all aspects of construction, material procurement, operations and maintenance. While many communities are accustomed to overseeing construction projects, owning and operating a broadband utility presents unique challenges. Unlike most municipal utilities, the broadband industry is competitive. This means municipal leadership must navigate the complexities of hiring skilled talent and managing customer choices.

Additionally, while these projects are typically financed through revenue bonds, the municipality must possess the bonding capacity to support such a large-scale initiative.

City of McKinney, Texas:

McKinney serves as an example of a municipality that has successfully implemented its own connectivity infrastructure while seeking P3 relationships. The city determined the need to own and operate the

connectivity infrastructure for their facilities. Without eligibility for grants, they financed the infrastructure through Capital Improvement Plans (CIP) and other budgeted projects.

The city chose not to provide retail broadband services to residents and businesses. Instead, they issued a Request For Proposals (RFP) for an ISP to build fiber throughout the city, connecting all residents and businesses. The RFP included specific requirements for construction and services, attracting multiple respondents. McKinney did not have a significant number of unserved or underserved addresses, making them ineligible for need-based grants. The responses to their RFP did not require grants or any investment from the City. As a result, McKinney has progressed significantly with their municipal ring and has already built out fiber for the majority of the city.

8.5.1 Secondary Network Design Assessments

For counties with challenging topographies, including mountainous or rugged terrain, or extreme rurality LEO satellite systems offer a compelling option for bridging the digital divide. While high-level network design and implementation decisions rest primarily with the service providers, counties can explore P3s to support or subsidize deployment — particularly in critical service areas like emergency response.

Notably, most current Starlink partnerships are with federal or institutional customers. For example, the New South Wales Rural Fire Service in Australia invested $41 million to equip emergency vehicles with Starlink systems. While partnership models for counties are not clearly defined at this time, future arrangements could include bulk pricing, discounted service rates, or subsidized equipment for residents or government facilities.

However, it's important to note that counties are unlikely to have design leverage or influence over LEO network architecture, limiting their role primarily to facilitation, advocacy, or partnership coordination. While LEO internet may be the best option for residents in remote parts of the county, it also presents the least amount of P3 power a county or municipality may have when compared to fiber or fixed wireless solutions.

While fiber will always be the preferred solution for future-proofing broadband infrastructure, its cost per passing in specific parts of Brooks County may be high. If sufficient fiber infrastructure can be extended to tower sites, fixed wireless could also become a more viable and widespread solution, in addition to LEO Satellite.

Geostationary Orbit (GEO) Satellite Internet

Most known satellite internet service has been traditionally provided from GEO satellites that orbit at exactly 22,236 miles above the earth, but recent technology is enabling service from other orbits as well, most notably LEO - less than 1,200 miles in altitude. Medium Earth Orbit (MEO) satellites, such as GPS, are in between at approximately 12,550 miles in altitude. GEO satellites have been used as an internet service technology by providers such as Viasat and Hughes Network Systems for decades.

GEO satellite service represents an improvement over early dial up and copper-based technologies, which only offered speeds up to 10/1Mbps. Because of this, adoption of GEO satellite service has been primarily in geographies described above as remote, and in some rural and remote areas it represents the only available alternative that meets the 25/3Mbps FCC standard for broadband.

With GEO satellite internet, a consumer can receive 0.5 Mbps download and 80 Kbps (less than 1 Mbps) upload speeds. These data rates are typically lower than any other internet service technology, except dial-up which is now an exceedingly rare service.

A report by the Congressional Research Service in August 2021[30] notes a number of key challenges with GEO satellites as a technology that supports future-forward broadband needs. These include distance that data must travel to a satellite in orbit and back results in lower data rate, higher latency, and a lack of reliability in using many real-time applications, such as video conferencing. The latency of GEO providers averages nearly 636 milliseconds (ms) for the two large commercial providers. For comparison, reliable online gaming requires latency less than 20ms.

For decades, satellite constellations have been lauded as terrestrial alternatives, hoping to replace commercial wireline and wireless networks while experiencing a boom-and-bust economy. Due to high start-up costs, launch costs, and a slowness to respond to communications technology upgrades, notable satellite internet companies such as Teledesic, Iridium, and Globalstar filed for bankruptcy protection throughout the 1990s and 2000s. More recently, Intelsat, OneWeb, Speedcast, and Global Eagle continue to experience bankruptcy issues.

Low Earth Orbit (LEO) Satellite Internet[31]

LEO satellite internet represents the latest generation of satellite-based broadband technology. Unlike traditional geostationary satellites that orbit at approximately 22,000 miles above Earth, LEO satellites operate at much lower altitudes, enabling significantly reduced latency and improved service reliability. This advancement has made satellite internet a more viable option for underserved and hard-to-reach areas.

Modern LEO satellites are comparatively lightweight — approximately 500 pounds. To deliver consistent coverage, LEO systems rely on large constellations of satellites, each serving a relatively small area and using point-to-point communications to maintain continuous internet service. Major players like Starlink are actively expanding these networks to offer global coverage.

Latency, a key measure of internet responsiveness, is one of the most notable improvements with LEO technology. Typical LEO satellite latency ranges between 2 milliseconds (ms) and 27 ms.

For context:

- Fiber: 10–12 ms
- DSL: 11–40 ms
- Cable: 13–27 ms
- Traditional Satellite: 594–612 ms

According to the NTIA, both "unserved" and "underserved" location definitions include where latency less than or equal to 100ms.

LEO satellite internet offers a range of strategic benefits, particularly in areas where traditional broadband infrastructure falls short. One of its most impactful advantages is the potential to support the growing Internet of Things (IoT) ecosystem. With LEO connectivity, devices such as smart meters, connected vehicles, and home automation systems can maintain reliable connections even in remote areas. This opens the door for expanded smart grid technology, improved energy management, and more responsive public services.

[30] https://www.congress.gov/crs-product/R46896
[31] https://www.fujitsu.com/global/vision/insights/22-leo-satellite-broadband

Emergency services also stand to gain significantly from LEO adoption. Satellite internet can support rural telehealth applications, enable real-time data sharing between hospitals, and provide critical connectivity for law enforcement and fire departments operating outside traditional coverage zones. During natural disasters or infrastructure failures, LEO networks can act as a backup when terrestrial services go offline, improving overall resilience in emergency response.

Perhaps most critically, LEO satellite internet offers a practical solution for rural connectivity. In regions where the cost or geography makes fiber deployment unrealistic, satellite broadband can bridge the digital divide with fewer permitting hurdles and faster deployment timelines. While it may not replace fiber in terms of capacity or scalability, it serves as a valuable tool in the broadband toolkit — particularly when time and terrain are working against traditional solutions.

Despite its promising advantages, LEO satellite internet comes with a number of technical and logistical challenges. One of the foremost concerns is the limited availability of orbital real estate and wireless spectrum. The growing number of satellite constellations increases the risk of overcrowding in low Earth orbit, which could impact system reliability and pose safety risks over time.

Interoperability is another sticking point. Most LEO networks use proprietary technologies, which can create vendor lock-in and reduce flexibility for public agencies or end-users. As more providers enter the market, the lack of standards could lead to fragmentation and compatibility issues that complicate long-term planning.

Cost also remains a barrier for many users. While satellite equipment is becoming more affordable, service plans like those offered by Starlink still cost around $120 per month, with upfront equipment fees approaching $500. These price points may be difficult to justify in lower-income areas or for households with limited broadband needs.

Operational limitations must also be considered. LEO systems require clear line-of-sight to function properly, meaning obstructions like trees or buildings can degrade service. In forested or mountainous regions, this could require selective tree clearing or careful dish placement, adding complexity to deployments. Additionally, with thousands of satellites now orbiting Earth, concerns around space debris and satellite collision are mounting — raising questions about the long-term sustainability of this model.

Fixed Wireless Internet

Fixed wireless technology delivers high-speed internet by transmitting signals from a central tower to fixed receivers on homes or businesses. Unlike mobile wireless, which serves moving devices, fixed wireless provides a dedicated connection and often utilizes spectrum bands such as licensed, unlicensed, or shared CBRS (Citizens Broadband Radio Service). It requires minimal infrastructure compared to fiber deployment, making it a viable solution for extending broadband access in rural areas.

One of the primary benefits of fixed wireless in rural communities is its lower deployment cost. Because it eliminates the need for extensive trenching and fiber-optic cable installation, fixed wireless significantly reduces upfront capital expenditures. This makes it an attractive option for sparsely populated areas where the cost per household for fiber can be prohibitively high.

Additionally, fixed wireless enables much faster deployment, as it relies on existing towers or newly installed small towers. Unlike fiber networks, which can take years to complete, fixed wireless can be deployed in weeks or months, allowing for a quicker response to connectivity gaps. The technology is also highly scalable and flexible, enabling service providers to expand coverage based on demand without the high costs associated with extending fiber-optic lines to each home.

In terms of performance, fixed wireless has become increasingly competitive, with advances in technology such as millimeter wave (mmWave) and mid-band spectrum solutions allowing for gigabit-level speeds under optimal conditions. Furthermore, fixed wireless can overcome terrain challenges that make fiber deployment costly or unfeasible. In areas with rugged landscapes, rocky soil, or wetlands, the direct burial of fiber may not be practical, whereas fixed wireless can provide an alternative solution that circumvents these physical barriers.

Compared to buried or even aerially run fiber, there are more variables that determine fixed wireless placement. Due to these potential variables, most fixed wireless solutions should likely be determined by any potential partner through the P3 process.

One of the main drawbacks is its dependency on line-of-sight connectivity. Trees, buildings, and hills can obstruct signals, necessitating additional relay points or towers to maintain a stable connection. Weather conditions can also impact signal quality, with heavy rain, snow, and fog particularly affecting transmissions at higher frequencies. Additionally, the efficiency of fixed wireless depends on access to suitable licensed or unlicensed spectrum, which may be limited in some areas.

Regarding cost and implementation of fixed wireless solutions, the selection of infrastructure also requires careful consideration. Fixed wireless options are considered future-ready, with co-location on existing towers or the construction of new towers being the primary options. Co-locating on existing towers may cost between $20,000 to $75,000 per tower, depending on the equipment already in place, while building new towers could cost around $400,000. Additional costs per end-user, which may range from $1,900 to $3,000, are also anticipated.

The cost of ground equipment for towers will depend on several factors, including the number of cabinets, generator needs, power delivery, and site accessibility. If new towers are needed, the costs could range from $260,000 to $450,000 per tower, depending on the height and equipment requirements. Furthermore, each tower project would need to undergo various regulatory and environmental assessments, including compliance with FCC requirements and other studies, to ensure alignment with federal, state, and local regulations. In Brooks County, it should be assumed that geographic limitations may further increase these estimated costs.

In the P3 process, it would be advantageous to utilize existing county or city owned facilities as tower locations to minimize costs and expedite installation. These facilities may include fire stations, schools, government buildings, water towers, hospitals, business facilities, grain silos, radio/ TV broadcast towers, billboards, etc.

While fixed wireless is not a one-size-fits-all solution, its cost-effectiveness, speed of deployment, and adaptability make it a strong contender for expanding broadband access in rural communities. By addressing its inherent challenges through strategic infrastructure planning and spectrum management, fixed wireless can serve as a crucial component in closing the digital divide.

9 Appendices

9.1 Data Sources for Demographic and Census Related Information

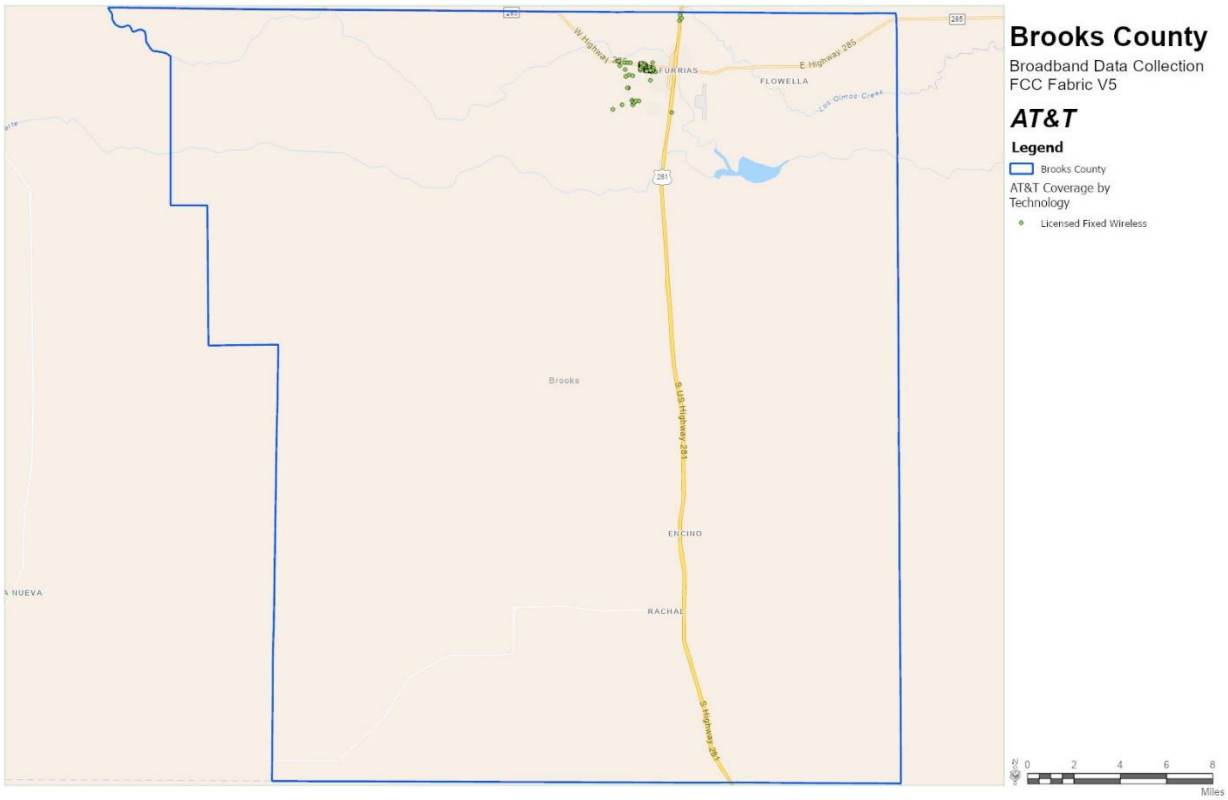
- The American Community Survey (ACS) is an ongoing survey that provides vital information on a yearly basis about our nation and its people. Information from the survey generates data that helps inform how trillions of dollars in federal funds are distributed each year.
- The BDO published and promoted a public draft of the TDOP. We encouraged all Texans to provide feedback on the plan and received more than 300 comments on the TDOP draft. Following public comments and related revisions, the BDO submitted the draft to the NTIA on Feb. 28, 2024. The NTIA accepted the TDOP on March 28, 2024.

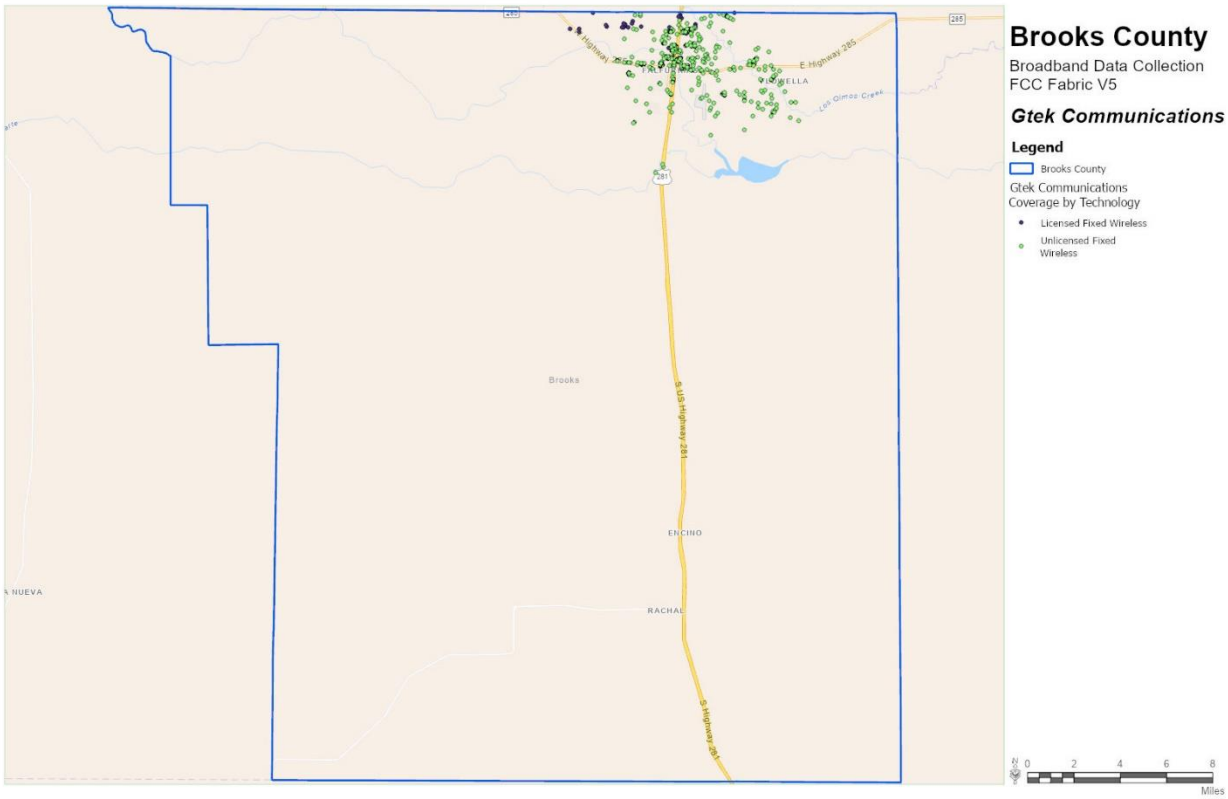
9.2 Asset Mapping Sourcing

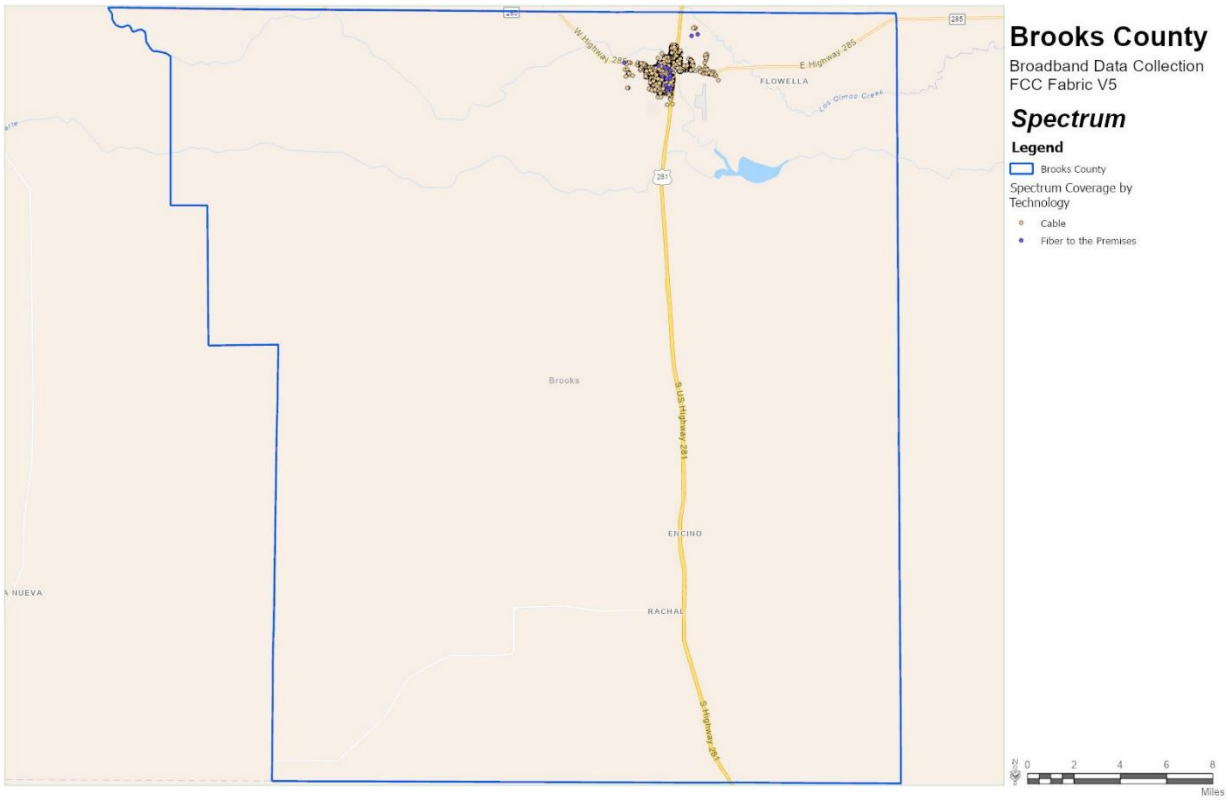
Report Information	Specific Criteria Used	Source
FCC Fabric Maps	Data created with FCC Fabric latest version and exports of ISP Fixed Broadband Availability Data	https://broadbandmap.fcc.gov/data-download
Locations service by Broadband Types	ULFW, FTTH, LFW, Copper, Cable	created by joining FCC fabric and ISP downloads
Unserved Locations		created by joining FCC fabric and ISP downloads
Underserved Locations		created by joining FCC fabric and ISP downloads
Served Locations		created by joining FCC fabric and ISP downloads
Number of Broadband Providers by Locations		created by joining FCC fabric and ISP downloads
Household Median Size	ACS Median Income and Household size	ACS_Household_Size_Centroids (FeatureServer) (arcgis.com)
Household Median Income	ACS Median Income and Household size	ACS_Median_Income_by_Race_and_Age_Selp_Emp_Centroids (FeatureServer) (arcgis.com)

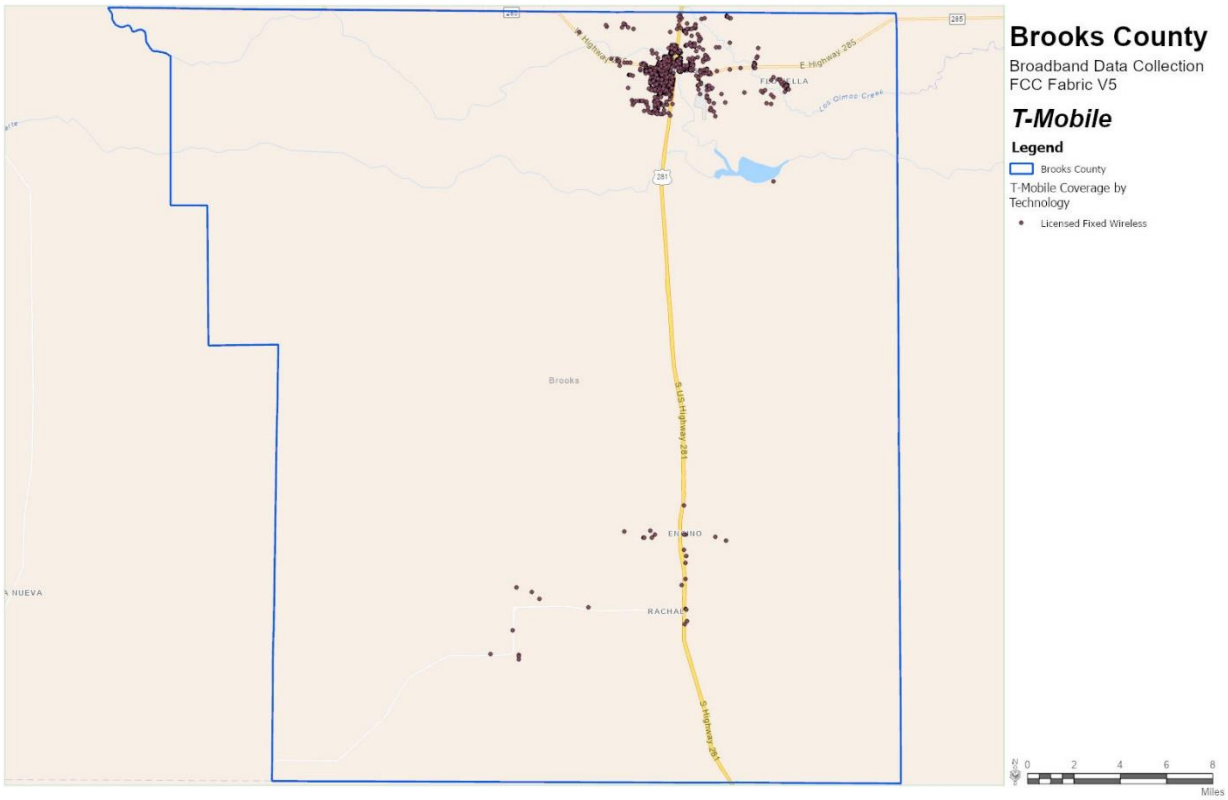
Report Information	Specific Criteria Used	Source
Households without Smart Device	ACS Internet Connectivity	ACS_Internet_Connectivity_Boundaries (FeatureServer) (arcgis.com)
Median Age	ACS Median Age	ACS_Median_Age_Boundaries (FeatureServer) (arcgis.com)
Urban and Rural		NBAM_Omnibus_v4b_Living_Atlas_gdb_View (FeatureServer) (arcgis.com)
Households without Internet	Addresses with zero providers from the FCC data	created by joining FCC fabric and ISP downloads
Right of Ways/ Jurisdictions	TxDot, RR, Pipelines, City/County Limits, Waterways, etc.	Various
Fiber Locator — Metro Networks		Fiberlocator.com
Fiber Locator — Long Haul Networks		Fiberlocator.com
Fiber Locator — Connected Buildings		Fiberlocator.com

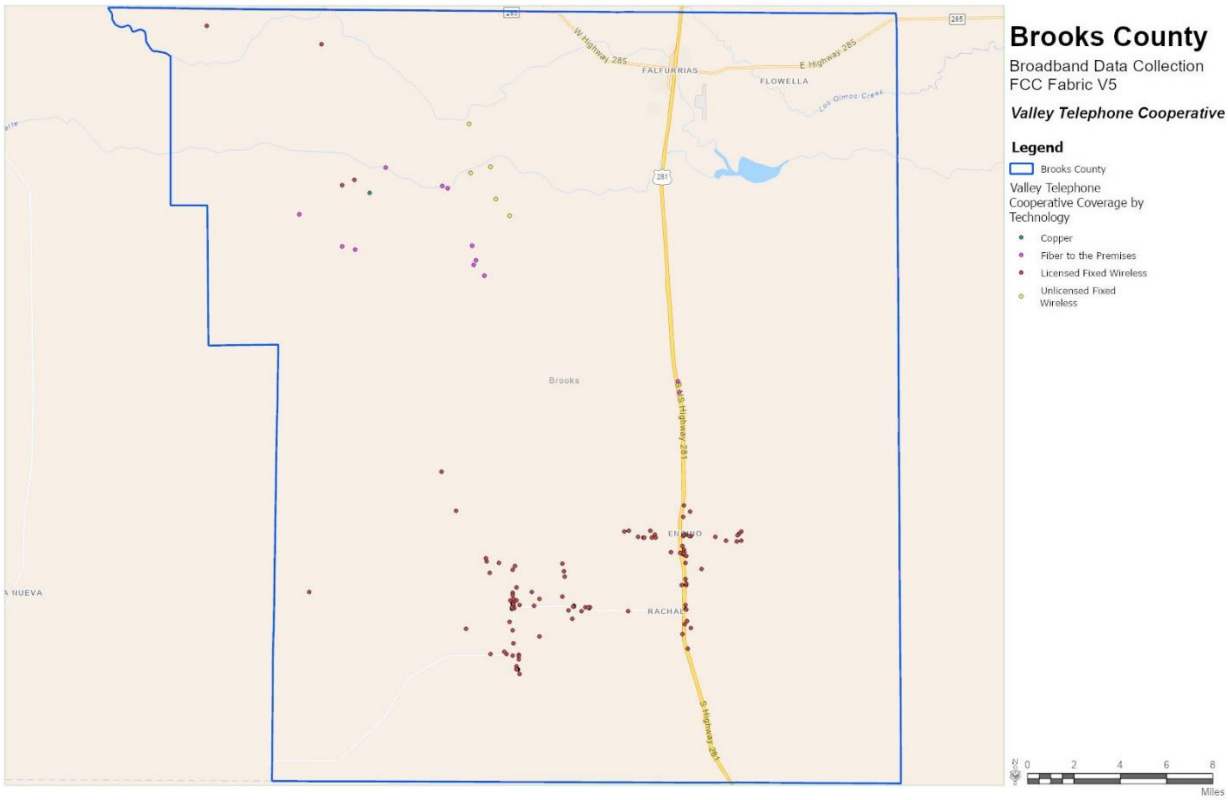
9.3 Brooks County Provider Service Maps

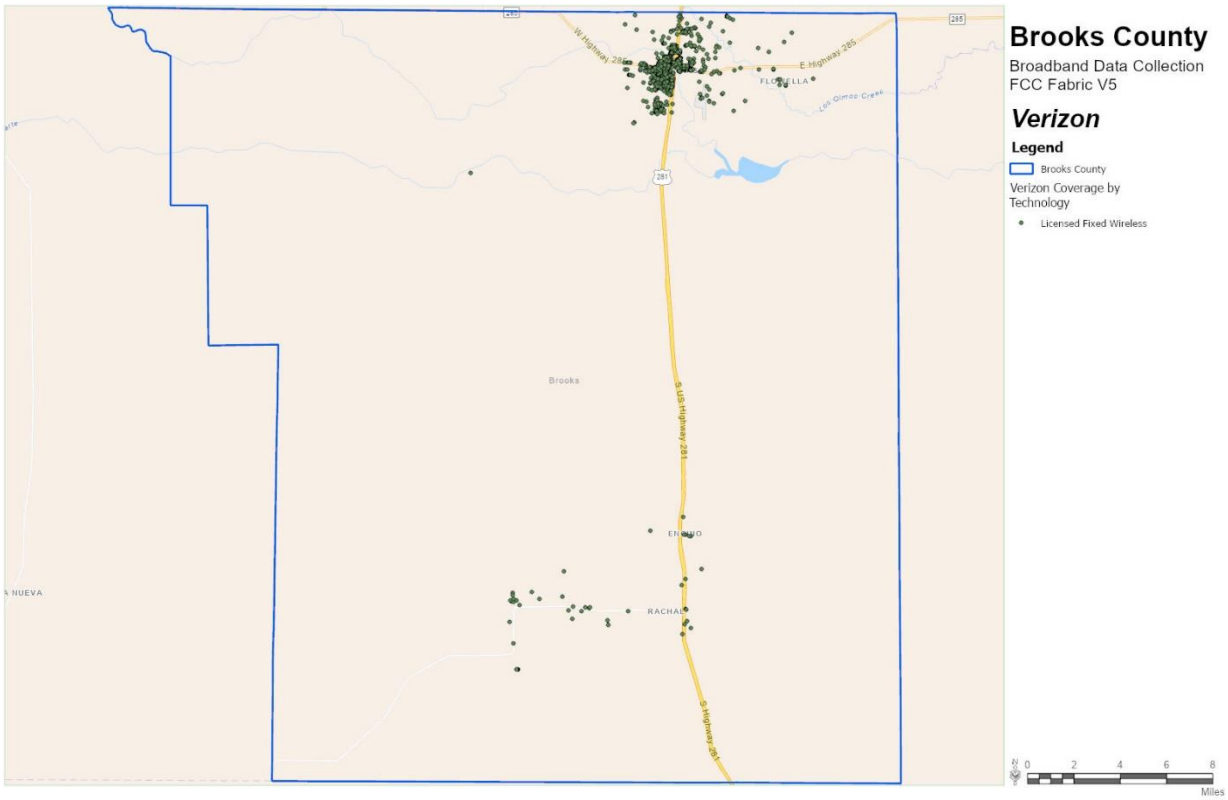





Brooks County
Broadband Data Collection
FCC Fabric V5
Spectrum
Legend
Brooks County
Spectrum Coverage by Technology
Cable
Fiber to the Premises
FLOWELLA
ENCINO
RACHAL
Brooks
0 2 4 6 8
Miles


Brooks County
Broadband Data Collection
FCC Fabric V5
T-Mobile
Legend
Brooks County
T-Mobile Coverage by Technology
Licensed Fixed Wireless
Brooks
0 2 4 6 8
Miles


Brooks County
Broadband Data Collection
FCC Fabric V5
Valley Telephone Cooperative
Legend
Brooks County
Valley Telephone Cooperative Coverage by Technology
Copper
Fiber to the Premises
Licensed Fixed Wireless
Unlicensed Fixed Wireless
W Highway 285
E Highway 285
FALFURRIAS
FLOWELLA
Los Olmos Creek
281
Brooks
S US Highway 281
ENCINO
RACHAL
NUEVA
0 2 4 6 8
Miles


Brooks County
Broadband Data Collection
FCC Fabric V5
Verizon
Legend
Brooks County
Verizon Coverage by Technology
Licensed Fixed Wireless
W Highway 285
E Highway 285
FLOWELLA
Los Olmos Creek
281
Brooks
S US Highway 281
ENCINO
RACHAL
NUEVA
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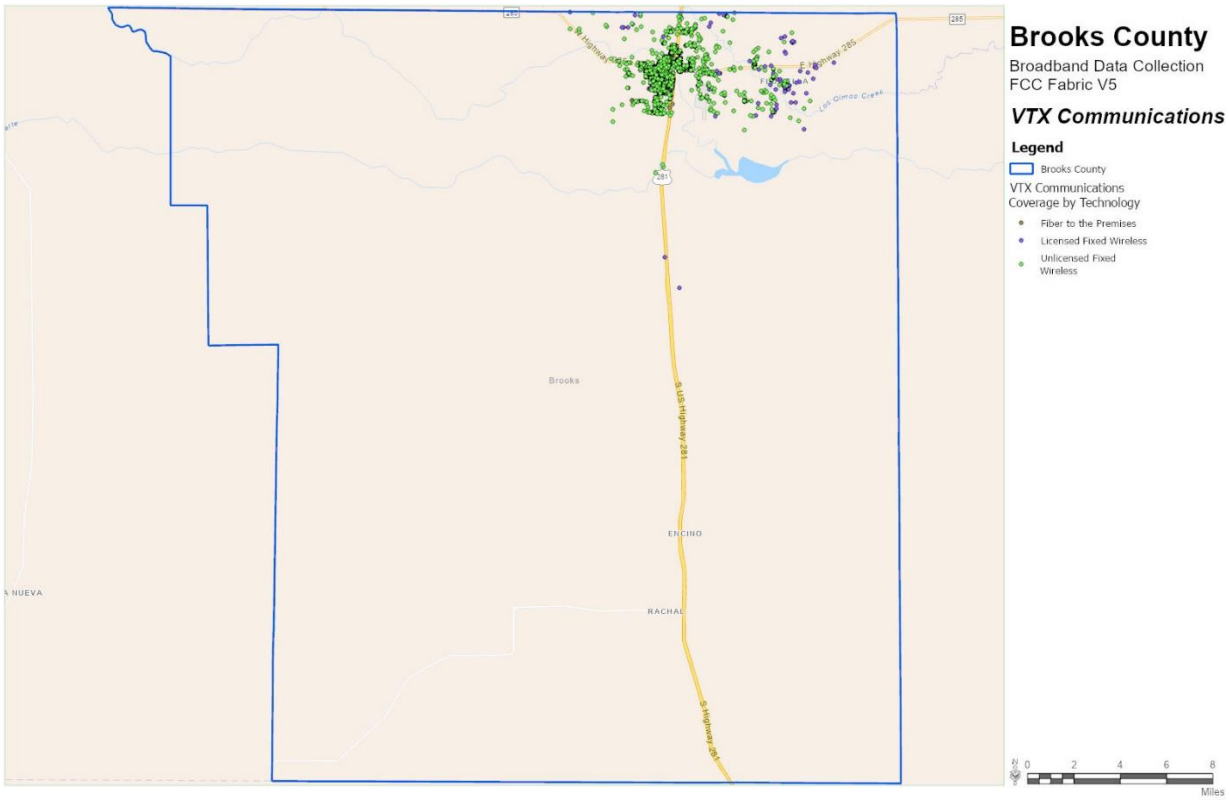
Miles



9.4 P3 - Request for Expression of Interest (RFEI) Template

The purpose of this RFEI is to gauge the interest and capabilities of potential suppliers or vendors before initiating a formal procurement process. The information gathered will be used to inform Brooks County's decision-making process for the development and implementation of broadband infrastructure within the county.

Brooks County is located in southern Texas and covers an area of approximately 944 square miles. As of the 2020 census, the population was 7,076, with around 88 percent of residents identifying as Latino. The county was founded in 1911 and named after James Abijah Brooks, a notable figure in the Texas Rangers. Economically, Brooks County is one of the poorest counties in Texas, with the largest employer being the Falfurrias Border Patrol interior checkpoint. Demographically, the county has a high percentage of Hispanic or Latino residents, and a significant portion of the population speaks a language other than English at home.

Broadband, once considered a luxury, has now evolved into a critical driver for economic growth and overall quality of life. It plays a pivotal role in education, business attraction, telemedicine, tourism, remote work, and supporting our senior citizens. Beyond mere convenience, broadband is now an essential tool for residents' work, medical care access, and children's education. Businesses also recognize it as a key factor when contemplating relocation. Given its significance, Brooks County is enthusiastically strengthening broadband services to benefit the entire community.

Project Overview

A project overview is a high-level summary of a project that outlines its key aspects. It serves as a roadmap for stakeholders and provides a clear understanding of the project's purpose, scope, and objectives {Insert Project Overview}:

The main components typically include:

- Project Title.
- Overview.
- Project Justification.
- Objectives.
- Phases of Work.
- Metrics for Evaluating and Monitoring.
- Timeline.
- Estimated Budget.

Objective:

A project objective is a specific, measurable and time-bound goal that a project aims to achieve. It provides a clear direction for the project team and stakeholders, ensuring everyone is aligned with the project's purpose {Insert Project Objective}:

The main key characteristics typically include:

- Specific.
- Measurable.
- Achievable.
- Relevant.
- Time-bound.

Scope of Work (SOW):

A project Scope of Work (SOW) is a detailed document that outlines the work to be performed for a project. It serves as a formal agreement between the project team and stakeholders, ensuring everyone has a clear understanding of what is expected {Insert Scope of Work}:

- Infrastructure Development: The service provider will be responsible for the design, planning, and installation of broadband infrastructure in the specified territory. This includes all necessary surveys, permits, and construction work.
- Partnership with ISPs: The installed infrastructure will be made available to ISPs for their use as a backhaul for their last-mile service. The service provider will coordinate with ISPs to ensure seamless integration and operation.
- Maintenance and Support: Post-installation, the service provider will provide ongoing maintenance and support to ensure the infrastructure's optimal performance and reliability.
- Grant Assistance: The service provider will collaborate with the county to identify and apply for grants that can offset the project's costs. This includes preparing necessary documentation and providing expertise on grant applications.
- Benefits to the Service Provider:

- Public-Private Partnership: This project offers the opportunity to enter into a public-private partnership with the county, opening avenues for future collaborations and projects. Brooks County does not intend to own or operate the proposed Broadband infrastructure.
- Visibility and Reputation: Being part of this initiative will enhance the service provider's visibility and reputation in the broadband market.
- Financial Support: Potential access to grant funding can significantly reduce the financial burden of the project.

Brooks County is looking forward to potential service providers' interest and is open to discussions to explore this mutually beneficial opportunity further. Please feel free to contact us for any clarifications or additional information.

Illustration Map (Appendix A)

HLD Options (Appendix B)

Questions and Response Guidelines

Respondents may submit questions by email to Brooks County no later than {Insert Time} by the deadline set forth in the Schedule of Events. Questions concerning this RFEI must be in writing and addressed to Brooks County at the email address below. Brooks County expects to electronically respond with answers to the written questions on or about the date set forth in the Schedule of Events.

Questions Contact

{Insert Contact Name and Email Address}

Response Guidelines

Submit one (1) electronic copy titled "{Insert File Name} Brooks County Broadband Network Deployment Submittal" to {insert contact email address}. Include {Insert File Name} Brooks County Broadband Network Deployment Submittal as the email subject title.

Schedule Of Events

- Issuance of RFEI: {Insert Date}
- Deadline for Submission of Questions: {Insert Date}
- Deadline for Submission of Response: {Insert Date}
- Interviews (if required): {Insert Date}

Proposal Format

Introduction

Each original Proposal and copy shall contain a cover sheet with the following: "{Insert File Name} Brooks County Broadband Network Deployment" and the name and address of Respondent. Proposal pages must be numbered consecutively.

Proposals must be organized as described in the section titled "General Organization of Response Content" below. Proposals not organized in this manner may be subject to disqualification. Conciseness and clarity of content are required; vague and general Proposals may be considered non-responsive,

which may result in the disqualification of said Proposals. Proposals must be complete; failure to provide all required information may result in the disqualification of the Proposal.

ALL EXHIBITS TO THIS RFEI ARE PREPARED EXCLUSIVELY FOR THIS RFEI. RESPONDENT'S SUBMISSION OF OTHER EXHIBITS OR DOCUMENTS, INCLUDING PRIOR RFEI EXHIBITS, MAY RESULT IN DISQUALIFICATION OF THE PROPOSAL.

General Organization of Response Content

The respondents must provide the following identifying information:

(1) Cover Letter which includes the name and address of the business entity submitting the response.
(2) Response to the following four categories of information:
    a. Existing service in the vicinity of Brooks County.
    b. Details of the infrastructure (technology) you are proposing.
    c. The service options that would be offered as the result of the project.
    d. Operational details such as who will operate and maintain the network.
(3) Detailed overview of Respondent's experience providing the requisite Services listed in the RFEI. Respondent must demonstrate its knowledge of and experience with activities relevant to the Services. Respondents must provide a detailed profile that describes the following:
    a. The size and scope of all operations, including number of Respondent's employees and years in business.
    b. References from similar fiber broadband projects.
    c. Case studies of previous similar work performed, particularly work in the last three (3) years.
    d. Depth and length of experience with state agencies.
    e. Depth and length of experience with local governments.
    f. Any other information Respondent believes is pertinent to this RFEI.
(4) Estimated project timelines for the following:
    a. Planning and design.
    b. Permitting and approvals.
    c. Construction and installation.
    d. Testing and activation
(5) Anticipated and unforeseen hurdles:
    a. Provide detailed insights into the anticipated difficulties related to the scope of work.
    b. Lay out strategies for handling unforeseen issues that may arise.
(6) Cost and budget:
    a. Supply estimated costs for materials (fiber, structure).
    b. Labor (installation, maintenance).
    c. Any recurring costs (maintenance, upgrades).
(7) The county desires to pursue grant funding from the Broadband Equity, Access, and Deployment (BEAD) program and any subsequent funding opportunities that may become available. Discuss your intent to pursue grant funding in coordination with the county:
    a. Describe previous successes in securing grant funding.
    b. Explain strategies for pursuing grant funding in relation to this scope of work.

In addition, please provide any and all important information and data your firm feels are important to the project. This could include insights, recommendations, potential challenges and opportunities.

Response Evaluation

The response will be evaluated on completeness and compliance with the requirements. Brooks County may eliminate any responses that (a) are non-conforming, (b) do not meet the minimum requirements, (c) are not economically competitive with other responses, or (d) are submitted by respondents who lack appropriate qualifications.

Brooks County will evaluate responses based on merit and the following criteria:

(1) Completeness of response.
(2) Willingness to provide last-mile service in identified regions and unserved areas of the county.
(3) Approach and philosophy concerning broadband deployment.
(4) Qualifications, experience and references.
(5) Comparative financial and partnership arrangements requested.
(6) Overall professional organization and quality of the RFEI.

Responder Selection

Brooks County reserves the right to reject any or all responses or portions thereof, to issue RFEI updates at any time, and to make any (or no) partnership arrangements based on county policies and needs. Brooks County reserves the right to make an award without further discussion of the responses submitted; there may be no best and final offer procedure. Interviews and negotiations may be conducted with one or more of the respondents. Each initial offer should contain the respondent's best terms from a cost or price, service, timing, and technical standpoint.

Brooks County may consult references familiar with the respondent regarding its prior operations and projects, financial resources, reputation, performance, or other matters. Submission of a response shall constitute permission for the county to make inquiries and authorization to third parties to respond to them.

Brooks County may elect to initiate contract negotiations with one or more respondents including negotiation of costs/price(s) and any other issues, terms and conditions, and modifying any requirement in the RFEI. The option of whether to initiate contract negotiations rests solely with the county. No respondent shall have any rights against Brooks County arising from such negotiations.

As a result of the selection of a respondent to supply products or services to Brooks County, the county is neither endorsing nor suggesting that the respondent's product or service is the best or only solution. The respondent agrees to make no reference to Brooks County in any literature, promotional material, brochures, sales presentation, or the like without the express written consent of Brooks County.

This RFEI does not create any obligation on Brooks County to make any contract award.

Compliance with Federal, State and Local Laws

Respondent warrants in submitting a response and in the performance of an award as a result of the response, that respondent has complied with, or will comply with, all applicable federal, state, and local laws, ordinances and all lawful orders, rules, and regulations hereunder.

Additional Information

If not explicitly asked in this request, respondents are encouraged to provide additional information that may be helpful to the county.

Limitation of Liability

Brooks County makes no representations, warranties, or guarantees that the information contained herein is accurate, complete, timely, or that such information accurately represents the conditions that would be encountered in pursuing the work now or in the future. The furnishing of such information by Brooks County shall not create or be deemed to create any obligation or liability upon it for any reason whatsoever and each respondent, by submitting its response, expressly agrees that it has not relied upon the foregoing information and that it shall not hold Brooks County liable or responsible therefore in any manner whatsoever. Accordingly, nothing contained herein and no representation, statement, or promise, of Brooks County, its directors, officers, agents, representatives, or employees, oral or in writing, shall impair or limit the effect of the warranties of the respondent required by this RFEI and that it shall not hold Brooks County liable or responsible therefore in any manner whatsoever.

Confidentiality

Any portions of the response containing confidential or proprietary information should be clearly marked "Proprietary and Confidential." Brooks County reserves the right to release any such information to its agents or contractors for the purpose of evaluating the respondent's response. Under no circumstances will Brooks County be held liable for any damages resulting from any disclosure of respondents claimed confidential information during or after the RFEI process.

Brooks County Confidential Information

Specifications, drawings, sketches, models, samples, tools, computers or other apparatus programs, trade secrets, confidential research, development or commercial information, intellectual property, patents, and /or other technical or business data are hereinafter designated as "Confidential Information." Confidential Information shall not include information that (a) is generally available to the public prior to the date of this Agreement; (b) enters the public domain during the term of this Agreement through no fault of the respondent; (c) the respondent can establish, through its own contemporaneous records, was in its possession prior to disclosure of the Confidential Information to the respondent; or (d) is independently developed by the respondent without reference to or use of the Confidential Information.

The respondent shall: (a) hold and maintain all Confidential Information received in strict confidence; (b) restrict disclosure of Confidential Information only to those employees of the respondent or its wholly owned subsidiaries who have been informed of the confidential nature of the information and have agreed to be bound by the restrictions of this Agreement governing disclosure of Confidential Information, and who need to know the Confidential Information for responses to Brooks County for furnishing material, software, documentation, or services hereunder; and (c) not duplicate, reproduce, distribute, store in any electronic information retrieval system, or disseminate Confidential Information in any other manner. All Confidential Information, whether written, oral, or other furnished to the respondent hereunder, or in contemplation hereof, shall remain the property of Brooks County. All copies of such Information in written, graphic, or other tangible form shall be returned to Brooks County or permanently destroyed at Brooks County's request.

Respondent obligations with respect to the Confidential Information shall survive termination of this Agreement and remain in full force and effect for a period of five years from the date of receiving of this Agreement.

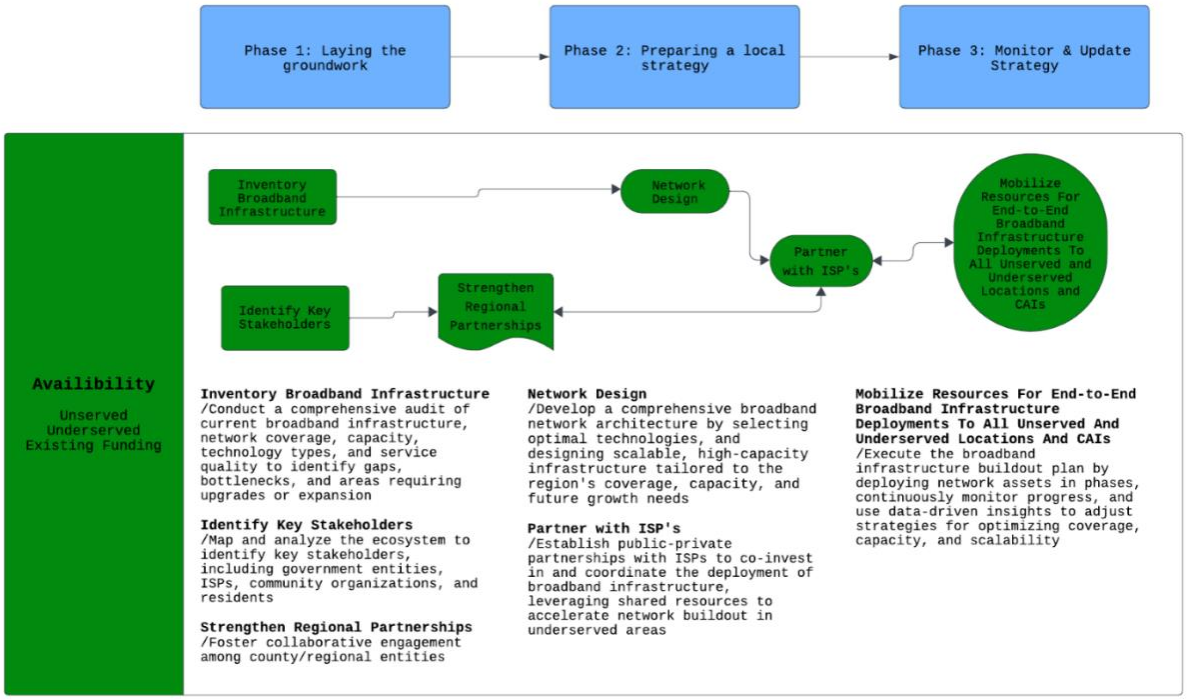
Due Diligence

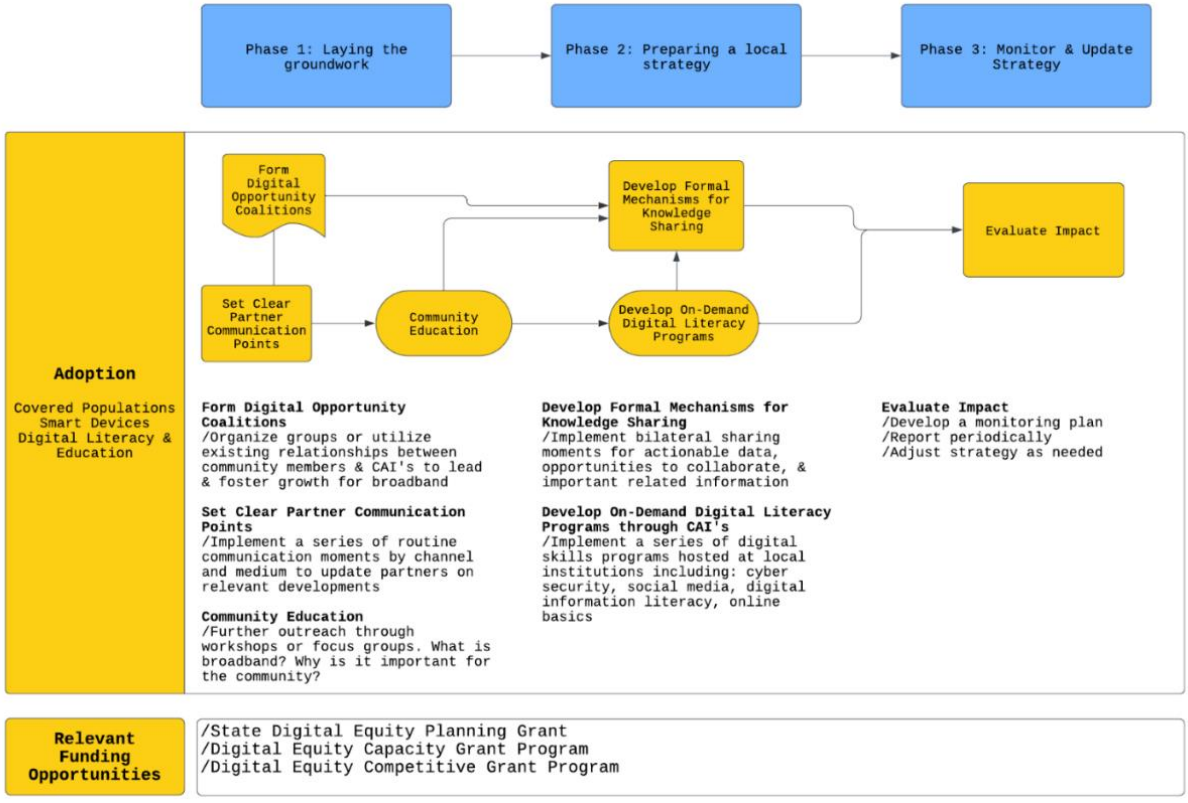
Prior to submitting a response, respondents should carefully examine all the supplied materials, including plans, specifications, and designs related to this project.

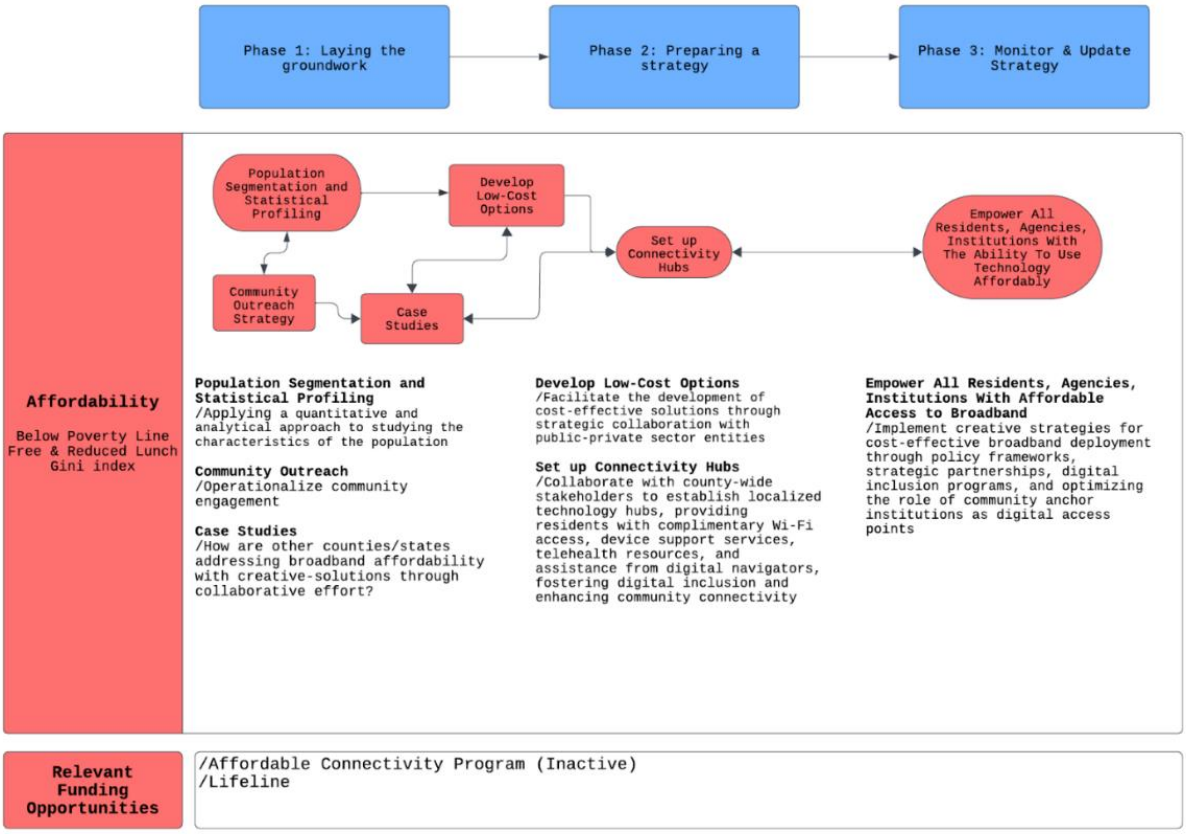
9.5 Digital Opportunity Definitions

Digital Opportunity	Digital opportunity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital opportunity is necessary for civic and cultural participation, employment, lifelong learning and access to essential services.
Digital Inclusion	Digital inclusion refers to the activities necessary to ensure all individuals and communities, including the most disadvantaged, access and use Information and Communication Technologies. This includes five elements: 1) affordable, robust broadband internet service; 2) internet-enabled devices that meet the needs of the user; 3) access to digital literacy training; 4) quality technical support; and 5) applications and online content designed to enable and encourage self-sufficiency, participation and collaboration. Digital inclusion must evolve as technology advances. Digital inclusion requires intentional strategies and investments to reduce and eliminate historical, institutional and structural barriers to access and use technology.
Digital Divide	The digital divide is the disparity in access to, knowledge of, and ability to use digital tools and technology.
Digital Literacy	The American Library Associations has defined digital literacy as "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills."
Covered Populations	(1) Individuals who live in households with income less than or equal to 150 percent of the federal poverty level. (2) Aging individuals. (3) Incarcerated individuals, other than individuals who are incarcerated in a federal correctional facility. (4) Veterans. (5) Individuals with disabilities. (6) Individuals with a language barrier, including individuals who are English learners and have low levels of literacy. (7) Individuals who are members of a racial or ethnic minority group. (8) Individuals who primarily reside in a rural area.

9.6 Digital Opportunity Roadmaps







9.7 Network Design Assessments

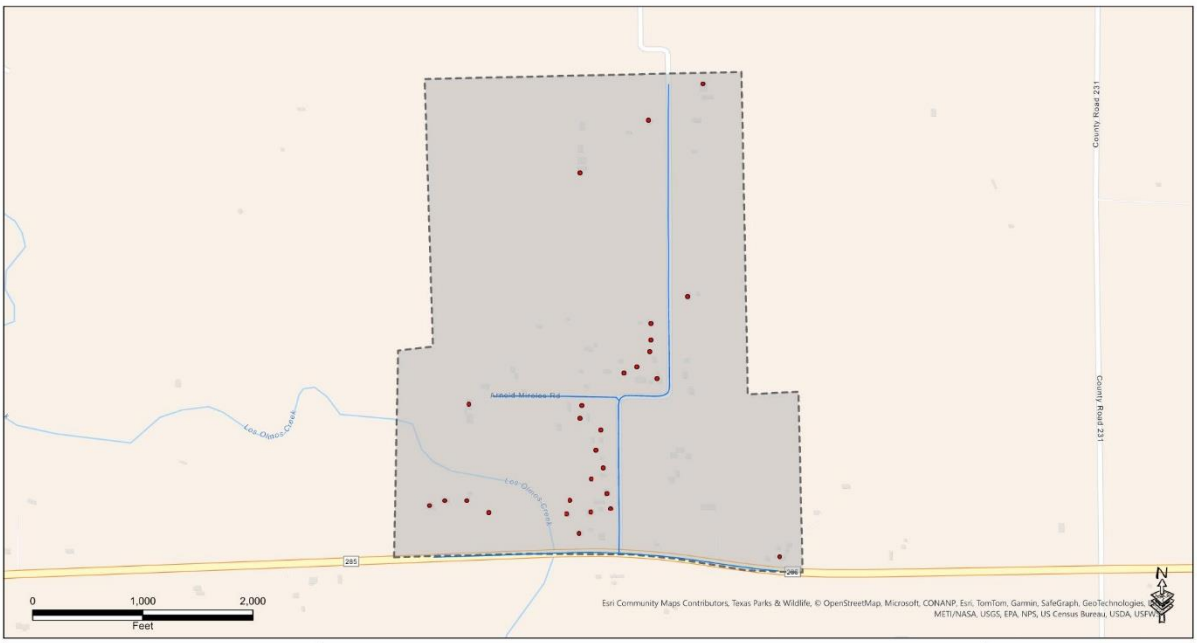
Please see each of the appendices below for the network design, unserved and underserved BSL counts and high-level cost per passing within Brooks County. Please note how different the cost per passing is per cabinet area. This points out the dramatic impact the number of BSLs and the distance to BSLs have on cost per passing.

There are some steps that can be taken to lower the cost per passing. For example, grant funding, changing the boundaries of a cabinet area (which can raise or lower the cost per passing), extending an existing network that is in close proximity to unserved or underserved BSLs, or utilizing a different infrastructure (aerial fiber, point-to-point technology, etc.).

Legend	State of Texas Brooks County Service Boundary A	Passing Count: 41 $7,142.53 \ Passing
Brooks Address Underground Path Proposed Service Boundaries Federally Funded Area		

HRG PLOT: 8:37 AM 4/1/2025

1:9,500



Legend	State of Texas Brooks County Service Boundary B	Passing Count: 28 $4,714.26 \ Passing
Brooks Address Underground Path Proposed Service Boundaries Federally Funded Area		

HRG PLOT: 8:37 AM 4/1/2025

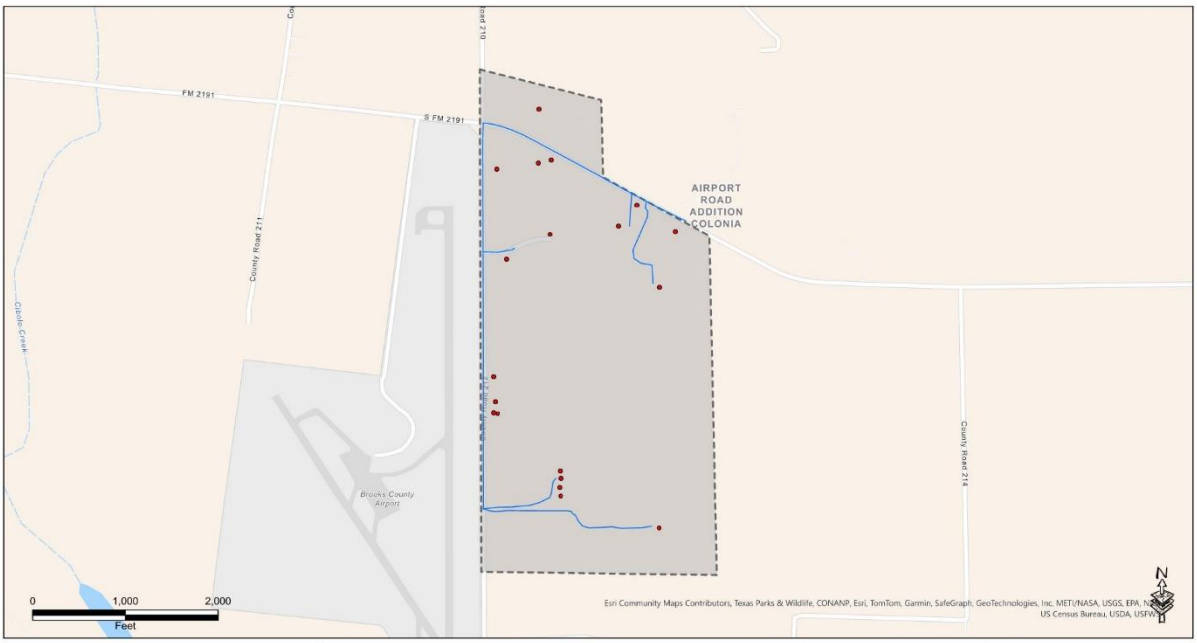
1:8,000

TEXAS BROADBAND DEVELOPMENT OFFICE

Legend	State of Texas Brooks County Service Boundary C	Passing Count: 15 $9,801.85 \ Passing
Brooks Address Underground Path Proposed Service Boundaries Federally Funded Area		

HRG PLOT: 8:37 AM 4/1/2025

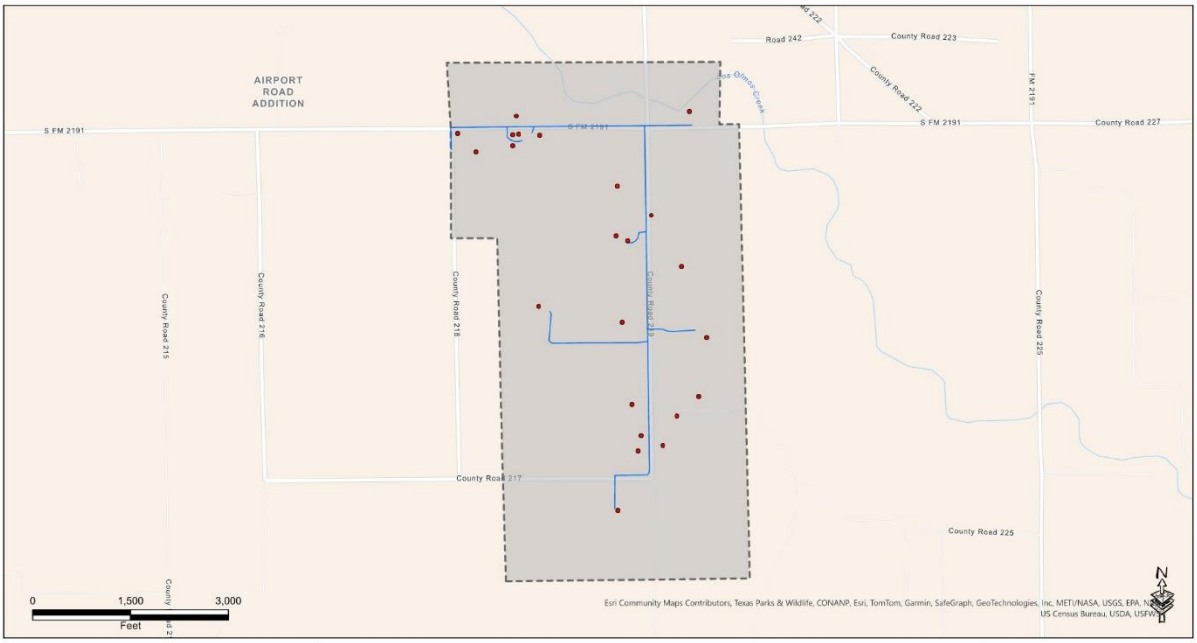
1:11,000



Legend	State of Texas Brooks County Service Boundary D	Passing Count: 19 $8,175.83 \ Passing
Brooks Address Underground Path Proposed Service Boundaries Federally Funded Area		

HRG PLOT: 8:37 AM 4/1/2025

1:9,500



Legend	State of Texas Brooks County Service Boundary E	Passing Count: 23 $8,307.49 \ Passing
Brooks Address Underground Path Proposed Service Boundaries Federally Funded Area		

HRG PLOT: 8:37 AM 4/1/2025

1:13,500

Legend	State of Texas Brooks County Service Boundary F	Passing Count: 34 $4,161.81 \ Passing
Brooks Address Underground Path Proposed Service Boundaries Federally Funded Area		

HRG PLOT: 8:37 AM 4/1/2025

1:6,000